AN EXAMINATION OF EXCEPTIONAL STUDENT FUNDING IN THE STATE OF FLORIDA

By

LENFORD CHARLES SUTTON SR.

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Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
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LENFORD C. SUTTON SR.

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Chairman: R. Craig Wood
Cochair: David S. Honeyman
Major Department: Educational Leadership

This empirical analysis was performed to demonstrate the effects of additional revenues for exceptional student programs, in the form of weighted program cost factors, on the equity of the school finance system in the state of Florida. At the time of the study 17 states had funding schemes that utilized weighted program cost factors to fund higher costs that were associated with exceptional student populations. One of the foremost concerns in the study of education finance is the equalization of educational opportunities; theorists have recognized this concept as equity. Equity is achieved when there is an assurance of equality in the distribution of educational revenues to provide comparable educational programs and services after the different needs of students and costs for providing them were taken into account.

The indices utilized to measure equity and fiscal neutrality were applied to determine the effects of additional revenues for weighted program cost factors regarding the equity of the system. The principles of horizontal equity, vertical equity, and fiscal neutrality were utilized in the analysis of the statistical results.

Results from the calculation of the measures of equity indicated changes in the variation in the distribution of revenues per pupil per district as groups of weighted program cost factors were added to the Florida Education Finance Program. The changes in the variation were due to the effects of additional revenues for weighted program cost factors. Measures of fiscal neutrality indicated a lack of a relationship between the property wealth per pupil per district and revenues per pupil per district. There was no change in the relationship between the property wealth per pupil and revenues per pupil as weighted program cost factors were added to the Florida Education Finance Program.

CHAPTER I
INTRODUCTION

Although specifically referring to rights of African-American children, the legal mandate in Brown v Board of Education[1] extends equal educational opportunity to include the handicapped.[2] Educational opportunities for the handicapped were set forth in the consent decree established in Pennsylvania Association of Retarded Children v Commonwealth of Pennsylvania (PARC). [3] Further illustrations can be found in Mills v Board of Education which extended educational opportunity to include all handicapped children.[4]

The re-authorization of The Education for All Handicapped Children Act (1975), effectively changing its title to the Individuals With Disabilities Education Act (IDEA) emphasizes the individual differences of children.[5] Provisions for the education of the handicapped are set forth in IDEA under Public Law 94-142[6] which ensures: (a) a free appropriate public education, (b) an individualized education program, (c) special education services, (d) related services, (e) due process procedures, and (f) the least restrictive environment in which to learn.[7]

Accordingly, state school finance officials have formulated elaborate funding schemes to distribute revenues for providing exceptional student programs and related services.[8] To neutralize higher costs for educating exceptional children who need resources beyond those offered in regular education programs, states have generally adopted three methods which included; (a) instructional unit, (b) weighted index, and (c) excess cost formulas.[9] States that employ a unit-financing program reimburse school districts for each designated unit of instruction, administration, and transportation.[10] Weighted pupil formulas are based on types of specific children multiplied by an average cost per pupil or the type of service provided to students associated with the level of educational need. Excess cost formulas provide districts with a percentage or the actual cost of providing exceptional student education services.[11]

Additional costs for educational programs are generally related to legitimate differences based on district characteristics, type of program in which a student is enrolled, or characteristics of student populations such as the learning disabled, students with English as a second language, and the poor. Most state school funding programs recognize increased costs and the need for supplemental resources to meet minimum goals for these children.[12] If states were to maintain an equitable funding scheme, school districts may require state compensation to fund excess costs associated with exceptional student programs.[13]

Exceptional Student Education

The Education for All Handicapped Children Act (IDEA) was enacted to establish the educational rights of physically, mentally, and emotionally handicapped children.[14] It contains a "zero reject" provision that ensures the inclusion of a broad category of children with disabilities.[15] The classification of children served under IDEA are (a) specific learning disabilities, (b) speech or language impairments, (c) mental retardation, (d) serious emotional disturbances, (e) multiple disabilities, (f) orthopedic impairments, (g) visual impairment, (f) autism, (g) deaf-blindness, and (h) traumatic brain injury.[16]

Section 504 of The Education and Rehabilitation Act of 1973[17] was the first legislation designed to secure the rights of all handicapped persons. It established a standard for the elimination of attitudinal and architectural barriers in an effort to bring more handicapped persons into the mainstream of American society. The Americans with Disabilities Act[18] extends the rights of the disabled beyond the parameters set forth in Section 504 of the Rehabilitation Act of 1973.

The interpretation of the true intent of federal legislation related to handicapped children has been primarily the function of the judiciary. Generally, litigation pertaining to exceptional students entails disputes between school districts and parents of handicapped children seeking additional resources. Most court challenges seek an interpretation of the following statutory provisions (a) free appropriate education, (b) procedural safeguards, (c) individualized education program (IEP), (d) least restrictive environment, (e) separate school placement, (f) related services, (g) discipline, (h) attorney's fees, and (I) tuition reimbursement. [19] The seminal case that set the standard for the definition of education provisions for the handicapped was Hendrick Hudson Board of Education v Rowley.[20] This was the first Supreme Court decision which attempted to define the free and appropriate education clause of the Education for All Handicapped Children Act.[21] Further accommodations in the form of school related services required to assist handicapped children were provided in the case of Irving Independent School District v Tatro.[22] The Supreme Court augmented previous educational rights for exceptional students in the case of Honig v Doe[23] in which the court prohibited the unilateral exclusion of handicapped students from the classroom for disruptive behavior that is a manifestation of the child's disability. Federal statutes, court rulings, general public concern and intensified equity issues have magnified the states' responsibility for funding exceptional student programs and services while remaining sensitive to the effects of funding patterns for special education within their respective school finance programs.[24]

School Finance Equity

"In financing public schools, states have been concerned with equity, adequate provision, and efficiency of education. Of these, more attention has been directed to the concern for equity."[25]

> The goal of school finance that is labeled equity is more commonly expressed as equality of educational opportunity. This expression recognizes that it is not possible to educate all students to the same level, for they have different preferences and innate abilities. There are many possible definitions of equal educational opportunity, but in practice the concept has been limited to mean assuring enough money to provide comparable programs for students when their different needs and the costs of providing them have been taken into account.[26]

There are many objects that could be considered in assessing whether a funding scheme is fair to children.[27] Upon choosing from among possible objects, such as revenues per pupil, equity principles must be applied in order to assess the fairness of the distribution of dollars.[28] Equity for children encompasses three principles: horizontal equity, vertical equity, and fiscal neutrality.

The principle of horizontal equity declares that students who are alike should receive equal shares.[29] If the object were expenditures or revenues per pupil, educational resources for basic programs, or pupil teacher ratios, then all students who were classified alike would receive equal shares. Fiscal neutrality is the equity principle that requires that the quality of a student's education not be a function of the wealth of the local school district.[30] The principle of vertical equity declares that certain legitimate differences among students warrant appropriately unequal treatment in the distribution of shares.[31]

State of Florida

The system of financing public schools in the state of Florida was selected for this study. During the 1995-96 school year, the public schools of Florida had the third largest increase in the number of school-age exceptional students in the United States. Only Nevada and Arizona have experienced higher increases in exceptional student enrollments. [32] In this same year, Florida had over two million students in its elementary and secondary schools.[33]

Florida is widely recognized as a state sensitive to equity issues in the maintenance and operation of its public schools. Schools are funded through the Florida Education Finance Program (FEFP), which allocates funds based on the product of full time students, program cost factors, and a base student allocation, vertically adjusted for school district characteristics such as district cost differentials and population sparsity.[34] To obtain the minimum foundation, required local effort based on annual property appraisals is supplemented by state contributions.[35] In 1995-96, Florida was one of seventeen states that recognized higher per pupil costs associated with exceptional student programs through the application of weighted cost factors in its school finance funding formula.[36] Empirical analysis has found the Florida Education Finance to be one of the most equitable among the fifty states.[37]

Purpose of the Study

In this study, equity principles and the funding of exceptional student education programs were addressed. The purpose of this study was to determine the effects of additional revenues for weighted cost factors for exceptional students on the equity of a state school finance system. The researcher applied quantitative measures of equity to assess the degree to which weighted cost factors neutralized higher per pupil costs due to varying student needs under the principles of equity.

Research Question

This study was conducted to answer the following research question: What were the effects of additional revenues for weighted cost factors for exceptional students on the equity of a state school finance system?

Significance of this Study

A review of the literature revealed a number of studies on the equity of state school finance programs. Studies in the mid 1970s examined the effects of special programs for exceptional students upon the implementation of the FEFP.[38] National studies provided a descriptive analysis of the exceptional student programs and funding.[39] However, the review failed to reveal any studies concerning the effects of weighted cost factors for exceptional students on the equity of school finance systems.

This study is intended to add to the existing empirical evidence related to the equity of school finance systems. It is also designed to contribute to the limited amount of literature concerning the funding of exceptional student education programs.

Limitations of the Study

There are several prevalent themes among school finance scholars and related literature. First, there is growing concern among a reluctant tax-paying citizenry as to who should bare the burden of funding public education. Researchers have also been concerned with adequacy and efficiency in the utilization of educational resources provided to school districts for the maintenance and operation of public schools. Horizontal equity, vertical equity, and fiscal neutrality are philosophical constructs frequently examined by school finance researchers in their empirical studies of state school finance programs. In this investigation, equity in the distribution of revenues to school districts for higher costs associated with legitimate differences and educational need among exceptional students and programs were addressed. Concerns related to adequacy, efficiency, and the burden for paying for public education were not included in this descriptive study.

This study was limited to all sixty-seven school districts in the state of Florida for the latest available fiscal year which was 1995-96.

Definition of Terms

Equity is the concept of a fair and just method of distributing resources to provide for children's educational needs.[40]

Individual Education Program (IEP) is a written statement for each child with a disability developed in any meeting by a representative of the local educational agency or an intermediate educational unit who shall be qualified to provide, or supervise the provision of, specifically designed instruction to meet the unique needs of children with disabilities.[41]

Least Restrictive Environment refers to the maximum extent appropriate, handicapped children, including children in public or private institutions or other care facilities (should be) educated with children who are not handicapped, and that separate schooling, or other removal of handicapped children from the regular educational environment (should) occur only when then nature or severity of the handicap is such that education in regular classes with the use of supplementary aid and services cannot be achieved satisfactorily.[42]

Procedural Due Process is the right to protest and remain where you are until that protest is heard and decided upon.[43]

Related Services are transportation, and such developmental, corrective, and other supportive services (including speech pathology and audiology, psychology services, physical and occupational therapy, recreation, and medical and counseling services shall be for diagnostic and evaluative purposes only) as may be required to assist a handicapped child to benefit from special education.[44]

Zero Reject is the right to be included in a free appropriate, publicly supported educational system.[45]

Notes

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[1] Brown v Board of Education, 349 U.S.294 (1955).

[2] Brown v Board of Education, 349 U.S.294 (1955).

[3] Pennsylvania Association for Retarded Children v Commonwealth, 334 F.Supp. 1257 (E.D.Pa1971), 343 F.Supp. 279 (E.D.Pa.1972)

[4] Mills v Board of Education, 348 F.Supp 866 (D.D.C.1972)

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[5] The Education for All Handicapped Children Act (EAHCA), 20 U.S.C.A. § 1400 (b) (1975)

[6] 20 U.S.C.A., § 1400(b)

[7] 20 U.S.C.A § 1401 (16-91)

[8] R. Craig Wood and David Thompson, Education Finance Law: Constitutional Challenges to State Aid Plans- An Analysis of Strategies, 2ed (Topeka: National Organization on Legal Problem of Education, 1996): 41.

[9] Marie Angele Thomas, "Finance: Without Which There is No Special Education," Exceptional Children, (March 1973): 476.

[10] Ibid.

[11] Samuel Dempsey and Douglas Fuchs, "'Flat' Versus 'Weighted' Reimbursement Formulas: A Longitudinal Analysis of Statewide Special Education Funding Practices," Exceptional Children 59, no. 5, (1993): 434.

[12] Robert Berne and Leanna Stiefel, The Measurement of Equity in School Finance (Baltimore: Johns Hopkins University Press, 1984), 14-16.

[13] Walter Garms, James W. Guthrie, and Lawrence Pierce, School Finance: The Economics and Politics of Public Education, 2d ed. (Englewood Cliffs, NJ: Prentice-Hall, Inc., 1988), 147.

[14] 20 U.S.C.A., § 1401 (1975)

[15] Ibid., § 1401-1 (1982).

[16] U.S. Department of Education, Eighteenth Annual Report to Congress on the Implementation of The Individuals with Disabilities Act: 1996, (Washington, D.C., 1996).

[17] Vocational Rehabilitation Act of 1973, 29 U.S.C.A § 706(7)(B) (1973).

[18] American With Disabilities Act, 42, U.S.C. § 12101.

[19] Kern Alexander and David Alexander, American Public School Law, 3d ed. (St. Paul: West Publishing Company, 1992): 367-377.

[20] Cathy Bradawl and John C. Walden, "'Free Appropriate Education'" After Rowley: An Analysis of Recent Court Decision," Journal of Law and Education, 17, no.1 (Winter, 1988): 35-51.

[21] 20 U.S.C § 1401-1461 (1975 & Supp. 1979).

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[22] 468 U.S. 883 (1984).

[23] 484 U.S. 305, (1988)

[24] Dempsey and Fuchs, 433.

[25] Garms, Guthrie, and Pierce, 130.

[26] Ibid.

[27] Berne and Stiefel, 8-12.

[28] Ibid., 12-13.

[29] Ibid., 13.

[30] Ibid., 17.

[31] Ibid., 18

[32] U.S. Department of Education, Eighteenth Annual Report to Congress on the Implementation of the Individual With Disabilities Education Act: 1996 (Washington, D.C., 1996).

[33] 1995-96 Florida Education Finance Program Final Calculation (Tallahassee, Fla.: Florida Department of Education, 1995).

[34] For a description of the FEFP, see Fla. Stat. 236.081 (1996).

[35] Fla. Stat. 237.051 (1996).

[36] David Thompson, R. Craig Wood, and David Honeyman, Fiscal Leadership for Schools (Whiteplains, NY: Longman Publishing, 1994).

[37] Chambers, Mary, The Effects of Additional Revenues from Capital Outlay Transfers on the Equity of a State School Finance System. (Ed.D. diss., University of Florida, 1996); O'Laughlin, Michael J. A Study of the Effects of the Sparsity Supplement on the Equity of the Florida Education Finance Program. (Ph.D. diss., University of Florida, 1992); Starke, Steven, The Florida Lottery: Its' Use as a Substitute for Existing Funds and its Effects on the Equity of Public School Funding. (Ph.D., diss., University of Florida, 1991)

[38] James Foshee et. al., A Study of the Effects on Special Programs for Exceptional Students upon the Implementation of the FEFP. Final Report, vol. 2 (Florida State University, Tallahassee, FL College of Education, 1974).

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[39] Office of Education, Gainesville, FL, National Education Finance Project, (Washington, D.C., 1973).

[40] Thompson, Wood, and Honeyman, 56-57.

[41] 20 U.S.C.A. § 1400.

[42] 20 U.S.C.A. § 1412-5 (B): 34 C.F.R. S300.551.

[43] U.S. CONST. Amend. XIV, § 1.

[44] 20 U.S.C.A § 1401(17).

[45] 20 U.S.C.A. § 1401 (18).

CHAPTER II
REVIEW OF THE LITERATURE

Introduction

The purpose of this chapter is to review literature related to this investigation. It begins with a summary of court cases that have aided the acquisition of equal educational opportunity for exceptional students. Next, leading scholars in the area of education finance are cited to trace the evolution of the principles of equity and methods utilized to classify the fairness of state education funding schemes.

Subsequently, there is a discussion of the federal and case law that is associated with the conceptualization of equity. The final section of this chapter contains a review of the literature associated with funding exceptional student education programs and related services.

Exceptional Student Litigation

On May 17, 1954 the United States Supreme Court delivered its monumental ruling in the case of Brown v Board of Education[1] which affirmed education as a fundamental right. The court explained

> Today education is perhaps the most important function of state and local governments. Compulsory school attendance laws and great expenditures for education both demonstrate our recognition of the importance of education to our democratic society. . . .In these days, it is doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity of an education. Such an opportunity, where the state has undertaken to provide it, is a right which must be made available to all on equal terms.[2]

In addition to its impact on school segregation, Brown served as the catalyst for revolutionary change in almost every facet of American society. Ultimately the case would serve as a useful resource in the quest for equal educational opportunity for children with handicapping conditions.[3] Since the landmark ruling in Brown, issues related to handicapped children were addressed in the courts as parents filed suit against school districts in an effort to obtain clear interpretations of the federal laws governing handicapped students.[4]

The educational practices in Pennsylvania were challenged in Pennsylvania Association for Retarded Children v Commonwealth of Pennsylvania (PARC).[5] The plaintiffs charged that certain school policies denied retarded children "a free appropriate public education."[6] Pennsylvania public school codes permitted alternate placement of retarded children in three manners; (a) A qualified school psychologist could certify a retarded child unable to benefit from public school instruction (b) the school board could deny admission to students whose mental age was less than five years, and (c) the local boards could also supply an educational plan in another setting "if it is unfeasible to form a special class."[7] A federal judge panel issued a consent decree in favor of plaintiffs. The court declared a

> Free, public program of education and training appropriate to the child's capacity, within the context of a presumption that, among the alternative programs of education and training required by statute to be available, placement in a regular public school is preferable to placement in a special public school class i.e. a class for handicapped children and placement in a special public school class is preferable to placement in any other type of program of education and training . . ..[8]

The court also appointed two special masters to ensure timely compliance with the court's instructions which included procedural due process rights for and periodic reevaluation of children with handicapping conditions[9]

Civil suit was filed on behalf of "exceptional" African-American children in the case of Mills v. Board of Education of District of Columbia.[10] Plaintiffs alleged they were labeled, denied admission, or excluded thereafter without placement alternatives and periodic educational reviews.[11] In finding favor with plaintiffs the court imposed a plan which called for; (a) a free appropriate education, (b) an individualized Educational Plan (IEP), and (3) due process procedures. Specifically, the courts decision extended educational rights beyond the mentally retarded to include a wide range of children with handicapping conditions and restricted exclusion of these children from regular education programs without due process. [12] Even though each state enacted laws that ensured free public instruction for children with handicapping conditions, many students were excluded from programs from which they could benefit. Increasing litigation and congressional influence emerged as catalysts for the development of appropriate programs for exceptional students.[13]

The Education Act for All Handicapped Children (1975) defines a "free appropriate public education" as

> special education and related services which: (a) have been provided at public expense, under public supervision and direction, and without charge, (b) meet the standards of the state education agency, (c) include an appropriate preschool, elementary, or secondary education in the state involved, and (d) are provided in conformity with the required individualized educational program.[14]

Originally known as the Education for the Handicapped Act (EHA), its initial purpose was the allocation of additional revenues to states to assist programming efforts for exceptional students at the local level. However, the Education for All Handicapped Children Act (EAHCA) altered part B of the EHA effectively solidifying the individual rights of exceptional students by establishing state compliance with federal statutory guidelines as a prerequisite for the disbursements of supporting funds. Congressional reauthorization of the EAHCA in 1990 (IDEA) emphasized a more individualized expression of its parameters, yet the judiciary would play a major role in further translation of the law's intent. [15]

In Board of Education of Hendrick Hudson Central School District v. Rowley the courts were asked to provide a more precise interpretation of a "free appropriate public education." [16] Plaintiffs argued that denial of a sign language interpreter to their deaf child denied the student access to a "free appropriate public education."[17] The District Court and Court of Appeals ruled in favor of the plaintiffs, effectively declaring the New York legislature responsible for maximizing the educational potential of each child commensurate with provided education opportunities.[18] In its reversal the Supreme Court declared

> Insofar as a State is required to provide a handicapped child with a 'free appropriate public education,' we hold that it satisfies this requirement by providing personalized instruction with sufficient support services to permit the child to benefit educationally from that instruction . . ..[19]

This two-pronged test played a major role in future exceptional student civil suits that required judicial interpretation of a "free appropriate public education."[20]

Placement in the least restrictive environment has been discussed and contested in advocacy efforts, countless due process hearings, and in the courts.[21] In Lachman v. Illinois State Board of Education plaintiffs challenged the educational placement of a profoundly deaf student in a self-contained classroom.[22] The dispute centered on the plaintiff's desire to have their child mainstreamed into a regular classroom with the addition of a full-time cued speech instructor. The school board prescribed a more restrictive placement within a hearing impaired classroom with similar children for at least one half of the school day.[23] Under P.L. 94-142[24] the philosophical intent of "least restrictive environment" was

> to the maximum extent appropriate, handicapped children, including children in public or private institutions or other care facilities, should be educated with children who are not handicapped, and that separate schooling, or other removal of handicapped children from the regular educational environment should occur only when the nature or severity of the handicap is such that education in the regular classes with the use of supplementary aids and services cannot be achieved satisfactorily. . . ..[25]

The court cited language used in Rowley as the foundation for its reasoning

> We previously have cautioned that courts lack the 'specialized knowledge and experience' necessary to resolve 'persistent and difficult questions of educational policy'. We think Congress shared that view when it passed the Act. . . . Therefore, once a court determines that the requirements of the Act have been met, questions of methodology are for resolution by the states.[26]

The court declared the individual educational plan evidence of a "free appropriate public education" and dismissed the case.[27]

In Irving Independent School District v. Tatro[28] the plaintiffs questioned the classification of services provided to a student diagnosed with spina bifida and symptomatic orthopedic and speech impairments. The petitioner established an individual education program that consisted of occupational and physical therapy, but omitted clean intermittent catheterization as a related service. Respondents viewed catheterization as a "medical service" restricted to a physician's prescription and supervision.[29] The Education for All Handicapped Children Act translated "related services" to include

> . . . transportation, and such developmental, corrective, and other supportive services including speech pathology and audiology, psychological services,

> physical and occupation therapy, recreation, and medical and counseling services, except that such medical services shall be for diagnostic and evaluation purposes as may be required to assist a handicapped child to benefit from special education, and includes the early identification and assessment of handicapping conditions in children.[30]

In finding judgment in favor of respondents the court determined clean intermittent cathertization to be a service "necessary to aid a handicapped child to benefit from special education that must be provided." [31]

The courts have served as a vehicle for further arbitration associated with the proper discipline of exceptional students as local school officials balance the rights of exceptional students with his duty to maintain order and provide an appropriate education for all children. More specifically, an enormous amount of litigation has surfaced concerning the suspension and expulsion of handicapped students.[32] In Honig v. Doe a California Superintendent sought judicial review of lower court rulings concerning the suspension of an emotionally disturbed student.[33] Plaintiffs challenged prior court interpretations that; (a) prohibited indefinite suspension of disabled students, yet, (b) authorized suspension of up to thirty days, and (c) required the state of California to provide direct educational services where the local education agency fails to do so.[34] The exceptional student demonstrated disruptive behavior including stealing, extortion of money from peers, and sexual harassment of female classmates resulting in his expulsion.[35] The U.S. Supreme Court provided a concise interpretation of the "stay put provision"[36] under The Education For All Handicapped Children Act. The court declared schools: (a) may not expel any disabled student for an indefinite period for disruptive conduct, which is a manifestation of his handicapping condition, or (b) may expel an exceptional student for a period up to ten days to insure safety of the general school population and provide a "cooling down" period, during which a meeting to review educational placement can be initiated.[37]

Exceptional student litigation has evolved from decisions which guaranteed a "free appropriate education" for the handicapped to court rulings that resolved specific disputes between parents and local school districts.[38] Although parents have been afforded the right to take grievances into the courts, the vast majority of special education controversies have been settled at the administrative hearing level.[39]

Equity Theory in School Finance

In Democracy in America, Alexis de Tocqueville noted that, even in its formative stages, our society has always attempted to be a country in which individuals could achieve an economically viable and socially productive position and receive the residual financial rewards based solely on their individual merit and work ethic. This concept of individual merit based on one's ability, achievement, and industriousness permeated the concepts of political and social equality throughout the works of the early political thinkers of our society.[40]

The genesis of scholarly thinking on educational equity began with Ellwood Cubberley's 1906 thesis on school finance problems.[41] He discovered that the use of flat grants were advantageous for urban areas with greater resources, whereas rural areas with small resources suffered under this method of school finance distribution.[42] According to Cubberley the use a flat grant based on teacher units would assist in providing additional resources to sparsely populated areas.[43] Cubberley believed that all children of a state have a right to equal resources and should receive similar consideration, however, he did note that perfect equalization may not be practical.[44] Cubberley suggested the goal of school finance to be the provision of the highest minimum level of education possible in light of resources available to the state.[45]

The conceptualization of school finance was augmented by the joint efforts of George E. Strayer and Robert M. Haig in their publication The Financing of Education in the State of New York, in 1923.[46] They are credited with establishing the minimum foundation concept based on equal educational opportunity for the children of a state. The major components of the minimum foundation program were (a) The formation of schools that were adequate to ensure every child in the state an equal opportunity up to some prescribed minimum, (b) a levy of state and local taxes proportional to paying ability to support the schools, and (c) the establishment of a state department of education to govern all schools.[47]

Paul R. Mort was a pupil under George D. Strayer at Teachers College of Columbia University. His thinking was similar to the ideas of Strayer and Haig. In The Measurement of Educational Need, he elaborated on the idea that a minimum foundation level of education should be established and supported at the state level.[48] According to Mort the cost of programs for education were directly related to educational need.[49] He explained

> . . .the educational need of a community is regarded as the composite of all of those elements in the community that would affect the cost of the public educational offering demanded by a state program for making available to all children a satisfactory minimum educational opportunity.[50]

Mort noted that there were three criteria for an adequate equalization program which quantified educational cost and educational need. The criteria were (a)

Educational activities found in most or all communities throughout the state (b) unusual expenditures necessary to support a minimum educational program, due to causes over which the local community has no control, and (c) in the instance that local communities provide a more costly educational program due to rare circumstances, this fiscal burden is considered an element of the equalization program.[51]

Mort proposed the use of teachers as a unitary standard in an equalization program.[52] In an effort to quantify educational need, Mort used prediction methods to determine if there was a relationship between teacher units and the mean daily attendance in proportion to school size. The results were the criterion used to estimate the amount of teachers necessary to provide an equalized program to schools of varying sizes.[53]

By the early 1960s the concept of per pupil equity in a foundation state distribution system shifted. Roe L. Johns and Edgar Morphet modified the concept of equal educational opportunity as a function of educational need.[54] Their view was that equal programs do not result in equal educational opportunity but equal opportunity of education should be a function of the individual needs of students.[55]

Characteristics of local communities and the varied ability to fund education assisted in quantifying educational need. Students with special needs, school sizes, and miniscule populations were vital in the evaluation of educational need.[56]

Henry C. Morrison was one of the first theorists to advocate a full-state funded education program.[57] According to Morrison fiscal inequities were the direct result of local funding efforts for education programs.[58] He opposed the idea of distributing school funds relative to local educational need but favored a distribution system that established an equitable amount of funds for each student, based on the wealth of the entire state.[59]

Excess costs for educational programs, for the most part, were related to special characteristics of student populations, the type of programs students are placed in, or the differences of schools and local communities.[60] Most education finance scholars have focused on equity for children and taxpayers. In their seminal work, The Measurement of Equity in School Finance, Berne and Stiefel discussed three conceptual questions pertaining to equity; (a) For whom is the distribution equitable? (b) what things should be equitably distributed? and, (c) how should these things be distributed?[61]

Horizontal and vertical equity are features of taxpayer equity. Taxpayers who have like circumstances should be required to pay the same amount (horizontal equity), whereas those with unlike circumstances should pay varying amounts (vertical equity).[62] Similarly, equity for students is both horizontal and vertical. Horizontal equity refers to the idea that identical students should receive identical treatment.[63] Vertical equity requires that unequals receive appropriately unequal treatment.[64]

Equity was a central theme of scholarly publications in the area of school finance, yet state school leaders were also concerned with adequacy and efficiency in the allocation of educational resources.[65] According to Garms, Guthrie, and Pierce

> The goal of school finance that is labeled equity is more commonly expressed as equality of educational opportunity. This expression recognizes that it is impossible to educate all children to the same level, for they have different preferences and innate abilities. There are many possible definitions of equal educational opportunity, but in practice the concept has been limited to mean assuring enough money to provide comparable programs for students when their different needs and the cost of providing them have been taken into account.[66]

Methodologies developed by researchers [67] and the courts[68] were applied to estimate the equitability of the distribution of funding to school districts. Scholars have used three concepts to quantify the equity of the distribution of educational resources; horizontal equity, vertical equity, and wealth neutrality.[69]

According to Thompson, Wood, and Honeyman horizontal equity requires similar students to obtain equal portions of educational resources.[70] Vertical equity requires the recognition of the individuality of all students. Gardener reasoned " . . . the traditional democratic invitation to each individual to achieve the best that is in him requires that we provide each youngster with the particular kind of education which will benefit him."[71]

Wealth neutrality acknowledges that local initiatives to fund above the minimum foundation are disequalizing.[72] There is a direct relationship between the fiscal health of a district and its ability to provide additional funding. The allocation of education resources should not be related to the local wealth of a community.[73] Empirical prediction studies performed by Carroll and Park have given credence to fiscal neutrality as a pre-requisite to equity.[74]

Equity Cases

Federal and state courts have served as a forum for the interpretation of equal educational opportunity. Litigating questions have come in the form of suits that seek to (1) Establish education as a fundamental right, or (2) show how funding disparities result in unequal opportunities by treating students in poor school districts differently from students who have greater access to fiscal resources.[75]

The doctrine of "separate but equal " facilities for blacks and whites was challenged in the case of Plessy v Ferguson.[76] In 1896 the Supreme Court expanded its decision beyond the scope of the original argument to include public schools. The court ruled that

> the most common instance of this (separate but equal treatment) is connected with the establishment of separate schools for white and colored children, which has been held to be a valid exercise of legislative power even by courts of states where the political rights of the colored race have been longest and most earnestly enforced.[77]

Over the past twenty years programs and services for handicapped children have become integral parts of public education.[78] The creation of P.L. 94-142 and other court challenges[79] have aided in developing a national system that addressed the needs of over 4.8 million students.

Since 1960 numerous challenges have attempted to address the equity concept as it relates to education finance. The courts have been asked to provide remedies regarding the inequities of state aid distribution formulas.[80] Two dominant questions have surfaced in these cases: (a) What level of government bears responsibility of education? and (b) what constitutional or statutory language may invoke that responsibility?[81] Specifically, should the accident of geography be a function of the quality of instruction a child receives? Do the equal protection clauses of state and federal constitution contain language that assures a right of equitable funding to each child regardless of his residence?[82]

In McInnis v Shapiro suit was filed on behalf of children from the poverty-laden district of Cook County, Illinois.[83] At issue were the extreme disparities among school districts and the constitutionality of the statutes that established the formula for distributing school funds.[84] The plaintiffs claimed that these disparities excluded them from an equal educational opportunity guaranteed by the Equal Protection Clause of the United States Constitution.[85]

The lower court dismissed the case and was affirmed by the state supreme court on subsequent appeal.[86] The opinion of the lower court conveyed that wide disparities in district expenditures did not constitute a violation of the Equal Protection articles of the Fourteenth Amendment.[87] The high court did recognize the conceptual worth of equality, but could not produce a neutral assessment of children's educational "needs."[88] The court ruled that local spending initiatives were prudent in light of the minimum foundation program provided by the state of Illinois.[89]

In Burruss v Wilkerson[90] the court invoked the same reasoning used in McInnnis v Shapiro. The plaintiffs in this case opposed the state of Virginia's program for the funding of public school based on varying degrees of educational opportunity across school districts; thereby violating the equal protection articles of the Fourteenth Amendment.[91]

Once again the federal court refused to recast a state finance program without a universally accepted measure of inequality among students. The absence of a method to evaluate educational need left the court unable to render a decision based on unmanageable standards.[92]

The California Supreme Court was the first judicial body to declare education a fundamental right under the state constitution which must be independent of the fiscal health of the local community. The decision in Serrano v Priest found the California system for financing public school in violation of the equal protection articles of the state and federal constitutions.[93] In the wording of the court

> this funding scheme invidiously discriminates against the poor if it makes the quality of a child's education a function of the wealth of his parents and neighbors. Recognizing as we must that the right to an education in our public schools is a fundamental interest which cannot be conditioned on wealth, we can discern no compelling state purpose necessitating the present method of financing. We have concluded , therefore, that such a system cannot withstand constitutional challenge and must fall before the equal protection clause.[94]

Upon determining that education was a "fundamental interest" under the state constitution and property wealth was a "suspect classification" the court applied the "strict scrutiny" judicial standard in striking down California's finance program. In court challenges involving a "suspect class" or the establishment of a "fundamental interest,"

> the U.S. Supreme Court had adapted an attitude of active and critical analysis, subjecting the classification to strict scrutiny. Under the strict scrutiny standard the state bears the burden of establishing not only that it has a compelling interest which justifies the law but that the distinctions drawn by the law are necessary to further its purpose.[95]

The courts' analysis of the finance program stated

> although the basic state aid program in California tends to equalize among school districts, the total system, including state and local funds combined, created great disparities in school revenues; and the system as whole generated school revenue proportional to the wealth of the individual school.[96]

In its response the California legislature invoked its desire to maintain some degree of local control, however the court affirmed that "the present finance system cannot be considered necessary to further this interest."[97]

The most noteworthy federal case related to the funding of public schools was San Antonio School District v Rodriguez.[98] The case was an appeal of a federal three-judge court in Texas who followed the same reasoning applied two years earlier in Serrano. The state court maintained that fiscal neutrality did not require that all educational expenditures be equal, but wealth neutral.[99] In 1973 the Supreme Court reversed the decision of the lower court. In its reversal the high court established criteria for the formation of a suspect classification. The court alluded to the similarities of persons or groups of individuals which constituted class discrimination in prior cases: " because of their impecunity they were completely unable to pay for some benefit, and as a consequence, they sustained an absolute deprivation of a meaningful opportunity to enjoy that benefit."[100] The court also stated that

> the system of alleged discrimination and the class it defines does not have none of the indicia of suspectness; the class is not saddled with disabilities, or subjected to such a history of purposeful unequal treatment, or relegated to such a position of political powerlessness as to command extraordinary protection from the majoritarian political process. We conclude that the Texas system does not operate to the peculiar disadvantage of any suspect class.[101]

On the issue of suspect classification, the court stated

> Nothing from this court holds today detracts from our historic dedication to public education. We are in complete agreement with the three judge panel below that the grave significance of education both to individual and to our society cannot be doubted. But importance of a service performed by a state does not determine whether it must be regarded as fundamental for the purpose of examination under the Equal Protection Clause . . .[102]

"Education, of course is not among the rights afforded explicit protection under our Federal Constitution. Nor is it implicitly protected."[103] In finding no discrimination against a suspect class and education not a fundamental right San Antonio did not require strict judicial scrutiny. This case required the traditional standard of review, which required only that a state's system demonstrate some relationship to a legitimate state purpose.[104] The court advised

> even on the most basic question in this area the scholars and

> educational experts are divided……..In such circumstances, the judiciary is well advised to refrain from imposing on the states inflexible constitutional restraints that could circumscribe or handicap the continued research and experimentation so vital to finding even partial solutions to educational problems and to keeping abreast of ever-changing conditions.[105]

In an opinion affirming the ruling Justice Powell concluded

> Education, perhaps even more than welfare assistance, presents a myriad of 'intractable economic, social and even philosophical problems.' The very complexity of the problem of financing and managing a statewide public school system suggests that "there will be more than one constitutionally permissible method of solving them," and that, within the limits of rationality, "the legislature's efforts to tackle the problems should be entitled to respect.[106]

This decision ended federal school finance litigation under the Equal Protection Clause of the Fourteenth Amendment of the U.S. Constitution and shifted the forum to state judicial systems.[107]

Early challenges to state school finance programs obtained favorable rulings founded on the Fourteenth Amendment and education's standing as a fundamental right guaranteed by the California Constitution.[108] In Robinson v. Cahill the New Jersey Supreme Court declared the state school finance system in violation of the "thorough and efficient" clause of the state's constitution.[109] This case established a new method of reasoning in which the courts depended on the education provisions of the state constitution without invoking equal protection.[110] In its ruling the court embraced the plaintiffs argument that the quality of educational opportunity is a function of monetary inputs. Extreme disparities in per pupil expenditures in the New Jersey system supported by property levys, in the opinion of the court, demonstrated unequal educational opportunity. The court said " The Constitution's guarantee must be understood to embrace that educational opportunity which is needed in the contemporary setting to equip a child for his role as a citizen and as a competitor in the labor market."[111] In the court's view, there was no question that an equal education for children in New Jersey was not being provided.[112]

The high court in the case of Horton v. Meskill found the Connecticut school finance formula in violation of the equal protection clauses of both state and federal constitutions.[113] The courts decision was based upon the logic used in Robinson v. Cahill as it also declared a violation of the state's education clause.[114] The ruling cited education as a fundamental right clearly established in Article VIII, sec. 1 of the Connecticut state constitution and grounded within a traditional state commitment to education. The court recognized the correlation between educational program quality and the dollars invested to provide them.[115]

The goals and purposes of the distribution program cited in the language of the constitution were challenged in Blasé v State of Illinois.[116] Plaintiff's argument was dependent on a direct interpretation of the Illinois constitution. The court determined the constitutional expression "[T]he state has the primary responsibility for financing the system of public education" to be considered a purpose and does not require a state to supply more than 50 percent of the needed funds.[117]

At issue in the case of Thompson v. Engelking was per pupil disparities across school districts related to local initiative in the state of Idaho.[118] The Supreme Court of Idaho accepted the concept that educational quality was in part determined by finance but found no violations of equal protection based on varying levels of expenditures.[119]

On the issue of fundamentality the court said " we refuse to classify the right to education as a fundamental right which compels the State, for the purposes of financing, to wipe out local entities and finance on the basis of revenues raised by some sort of statewide system." [120] The Idaho legislature demonstrated prudent grounds for creating and implementing the funding formula; the maintenance of local control.[121] In 1975 the constitutionality of the minimum foundation program was sustained.

The Oregon foundation program was challenged in Olsen v State.[122] Arguments for plaintiffs claimed that disparities in per pupil expenditures across districts based on local fiscal wealth resulted in unequal educational opportunities for children in poor areas of the state.[123]

In its affirmation of the foundation program the court was not precise on the fundamentality of education and the strict scrutiny standard.[124] It suggested that disparities in program offerings did not exclude any child from access to a minimum level of education.[125]

The Oregon Supreme Court created its own standard for the merits of equity of funding and local control. It balanced the effects of unequal revenues against the "ostensible justification" of local control. The courts opinion sided with the state legislatures desire to retain local initiative.[126]

In 1981 the New York State court ruled on school finance in Levittown v. Nyquist. In the view of the lower court plaintiffs established a violation of federal and state equal protection clauses caused by wide variations in per pupil expenditures related to differences in local wealth. The New York court of appeals reversed the lower court's decision effectively refuting plaintiffs' claim that education is a fundamental right under the constitution. The court ruled that education is

> unquestionably high on the list of priorities of governmental concern and responsibility . . . enlisting most active attention of the citizenry and the legislature, but this does not automatically entitle public education to be classified as a fundamental right.[127]

In applying the rational basis test for the school finance program the court accepted the states preservation of local control as a legitimate state interest reasonably related to the current system. [128]

In Dupree v. Alma School District [129] the Arkansas Supreme Court declared that education was not a fundamental right under the state constitution. Accordingly, federal and state equal protection provisions were not applicable thereby subjecting the funding scheme to the "rational basis test." The foundation program dependent on local property values was described as inadequate to meet the needs of the Arkansas student population. The state failed to demonstrate a rational relationship between fiscal disparities among districts and the resultant educational needs, effectively violating the equal protection and education articles of the state constitution.

After nearly two decades of school finance litigation there has been little change in the fundamental issues. In the late 1980s major cases turned on reasoning similar to that used earlier in Serrano and Robinson.[130]

Education was found to be a fundamental right in Kirby v. Edgewood Independent School District.[131] Under the foundation program approximately one third of the districts were unable to offer educational programs comparable to the state minimum. The court viewed the inadequacies as breech of duty by the Texas legislature to provide uniform educational opportunity guaranteed under the state constitution. The cornerstone of the courts' opinion rested on the issue of "efficiency" articulated within the state's constitution.[132]

In June of 1989 the Kentucky Supreme Court rendered its decision in Rose v. Council For Better Education Inc.[133] which determined whether the Kentucky General Assembly had complied with its constitutional mandate to provide an efficient system of common schools throughout the state.[134] The court determined education to be a fundamental right guaranteed under section 183 of the state constitution. The court ruled an education program that lacked adequate funding and created disparities in education inputs across local communities did not meet the requirements of the "efficiency" clause within the state constitution. Although the initial suit challenged the school finance system, the Kentucky Supreme Court summarily declared the entire system of education unconstitutional.[135]

In Helena Elementary School District v. State of Montana the state Supreme Court declined fundamentality considerations under the state's equal protection clause.[136] In declaring the funding scheme illegitimate the Montana superior court found a clear violation of the education provisions of the state constitution. The court refuted the state's three part defense which suggested that; (a) Its foundation plan was sufficient to meet state obligations, (b) quantified results of student performance were superior measures of educational opportunity, and (c) funding disparities related to local property wealth were a residual of statutory requirements.[137] The court ruled unanimously but withheld final adjudication in deference to the legislature's search for remedies.[138]

Abbott v. Burke was a subsequent challenge to the New Jersey school finance program.[139] As in Robinson v. Cahill the state supreme court declared the funding scheme wealth related and inadequate for meeting the guarantees within the state's education articles. In a break from tradition, the court strongly suggested the development of a distribution program that attempted to combat wide disparities in per pupil expenditures across districts.[140]

Summarily, the 1954 Brown decision established the legal foundation for civil action, against state legislatures, intended to serve as a catalyst for the reform of state school finance programs. The courts' ruling, which turned on the interpretation of the equal protection clause of the Fourteenth Amendment, mandated the availability of equal educational opportunities to all students within the public schools system. Though strong in its assertion, the decision failed to declare education a fundamental right secured under both state and federal equal protection statutes. Nevertheless, the core of the Brown decision accentuated an equal protection of the laws that could possibly include the assurance of an equitable amount of funding for all students within the public schools.

Legal challenges to state school finance systems, that cause fiscal disparities among school districts, have achieved very little success within the federal courts. Plaintiffs have attempted to demonstrate that a school finance system heavily dependent upon local assessed valuation inherently discriminates against students from districts with lower property values. Districts with lower assessed valuation generated substantially lower revenues per pupil for the education of students within their respective districts. In civil proceedings plaintiffs invoked the Equal Protection Clause of the Fourteenth Amendment to seek relief from discrepancies in the availability of education opportunities which were directly related to revenue generated to purchase educational resources.

Federal court rulings in legal challenges to the school finance systems in Georgia,[141] Kansas,[142] and New York[143] have determined disparities in educational funding to be immune to the strict judicial provisions of the Fourteenth Amendment. Plaintiffs were unable to demonstrate that a suspect classification was significantly harmed nor were they able to obtain a favorable judicial declaration of education as a fundamental right. The courts also found no manageable standard by which to measure the educational need for students in school districts.

At the state level, plaintiffs have achieved greater success in legal challenges to state school finance programs. Funding inequities caused by state school finance programs based on local assessed valuation were determined to be in violation of the equal protection clauses of the respective constitutions. Ultimately, the strict scrutiny standard of judicial review was applied as the court determined equal educational opportunity to be a fundamental interest in these states.

State litigation also introduced the judicially manageable standard of fiscal neutrality that declared that the quality of educational opportunity for students should not be a function of the wealth of their parents or their neighbors. Furthermore, court adopted measures of inputs per pupil among school districts within a state as an index to assess educational opportunity.

School finance litigation in state courts provided moderate success for plaintiffs and state legislatures. The initial cases discussed in this chapter addressed educational opportunity for students with special needs. Subsequent cases examined the prevalence of educational equity provided by state funding programs. The next section analyzes the various methods associated with funding exceptional student education.

Exceptional Student Funding

Special education funding formulas have only reached their present level within the last twenty years as related programs and services have moved from strictly voluntary offerings to mandatory programs aimed at vertically equalizing educational opportunities for children. States generally have funded special education just as other vertical needs are funded but the mandated nature of these programs and the enormous amount of dollars has prompted increased scrutiny and monitoring above that required for more permissive programs. [144] Sufficient economic resources must be combined and effectively allocated to produce efficient delivery systems, programs, and services to insure that the needs and rights of the handicapped are met and guaranteed.[145]

After the implementation of the Education for All Handicapped Children Act of 1975 school leaders in states receiving federal aid were obligated to provide exceptional student services.[146] Data on special education costs were needed

> . . . to aid in determining the levels of financing required to provide an appropriate education for handicapped children; to facilitate setting policies on service requirement and related matters by enhancing understanding of the costs of different types of services and educational placements; to allow adjustment of state and federal special education finance formulas to match local need; and to reduce fiscal incentives for inappropriate classification and placement of children.[147]

In the early 1980s exceptional student enrollments increased by 13 percent while overall school full time equivalents decreased by 6 percent.[148] Increased exceptional student population and rising demand for comparable educational services caused significant growth in related expenditures.[149]

In response, the federal government provided funds for several empirical investigations into this school finance dilemma. Evidence provided by the RAND

Corporation estimated expenditures for disabled children to be approximately 2.8 billion. It also discovered a need of an additional 2.9 billion per year to maintain current program levels. This two-year, multi-method study also addressed the state of services provided to the handicapped youth of America. Results revealed insufficient resources, gaps in services, lack of planning and coordination, and inequities. To eliminate and minimize the adverse effects of the system deficiencies, Brewer and Kakalik suggested coordinated efforts in the areas of prevention, identification, direction, medical treatment, and increased vocational training as the genesis for achieving greater benefits with long-range cost-effectiveness.[150]

A review of the literature on state practices in special education finance contains four central themes; programming, cost determination, level of funding, and funding formulas.[151] Programs, the resource and methods that comprise exceptional student services, are vital to the development of special education funding programs because of the fiscal impact of different educational programs. [152] Decisions concerning methods and resources will ultimately decide the appropriate level of expenditures necessary to support programs.[153]

In establishing a special education funding formula state policymakers must determine answers to several fundamental questions that will direct the development of an appropriate finance system. They are: (a) who is to be served in special education? (b) what programs and services are needed to ensure an effective program? (c) what are appropriate resources for the programs and services?, and (d) how are the costs to be shared between local and state agencies?[154]

Programs are the combinations of methods and resources that constitute special education and related services. Nationwide the make-up of these programs vary as states have employed an array of alternatives to address the educational needs of handicapped children based on severity of the disability.[155] Florida recognized that different programs are needed for different handicapping conditions as well as different degrees of the same handicap.[156] Colorado also varied its program according the severity of the handicapping condition. Students were classified as "mild," "moderate," or "severe."[157] New Mexico has initiated a four tiered programmatic system which entails (a) an itinerant teacher, (b) resource rooms, (c) special class moderate, and (d) special class severe.[158] Louisiana has operated under a system which identified five alternative classifications: (a) regular class aided by specialists, (b) regular classroom with resource room, (c) special class, (d) special day school, and (e) residential school.[159]

Maynard Reynolds developed a scheme sensitive to type and severity of disability adopted by most states and endorsed by many scholars. His model, used by several researchers,[160] includes (a) regular classroom with consultation to the regular teacher, (b) regular classroom supplemented by an itinerant teacher, (c) regular classroom supplemented by a resource teacher, (d) part-time special class, (e) full-time special class, (f) special day school, (g) homebound instruction, (h) residential schools, and (i) hospital schools. Some states adopted models which were resource-driven such as; (a) an itinerant teacher, (b) resource room, (c) special class moderate and, (d) special class-severe.[161] Program offerings and the number of participating children must be established in the early stages of forecasting special education costs. Prior to projecting the costs of special education, decisions regarding programming must be made as to the type of alternatives and the student capacity of each method.[162]

An evaluation of program costs is critical in assisting the allocation of educational resources. Historically, funding costs have been determined by three methods: (a) empirical investigation using historical data to project current and future needs, (b) expert opinion who consider emerging needs and contemporary funding trends, and (c) political forces exerted upon state legislatures.[163]

Several important cost studies have been completed during the past two decades that have assisted in establishing an acceptable foundation for the estimation of costs for special education.[164] In 1970 Rossmiller, Frohreich, and Hale led a National Education Finance Project special study in an effort to empirically estimate future educational need.[165] Data concerning the quality of exceptional student programs were collected in Wisconsin, Florida, California, Texas, and New York. The results estimated the cost of exceptional student programs to be twice that for educating regular students.[166] Several studies employed the same methodology used by the National Education Finance Project (NEFP) and found similar results.[167] Rosmiller and Moran cite several limitations to extrapolating past historical spending patterns into the future. They caution policymakers as to the inadequacies of averages and the propensity to omit within district disparities in size and standard of living. Researchers under the NEFP have cautioned fiscal planners and legislators regarding expenditure data and its tendency to be more descriptive than normative, consequently historical data are documented as opposed to current educational need. Moreover, such descriptive studies ignored the efficacy or efficiency variables within their methodologies; nevertheless, school business leaders have embraced these cost studies as empirical evidence to support funding programs in their respective states.[168]

Most investigations of special education funding formulas have addressed other concerns such as equity issues as this construct applies to expenditures, allocation of resources, and the identification of the various labels assigned to children who are identified for various programs.[169] However, in light of the recent changes, between 1982 and 1989, in methods for funding exceptional student program and services in thirteen states there have been relatively few empirical analysis of state funding strategies for exceptional student programs.[170]

In 1973 The Council for Exceptional Children assembled the Arilie House Conference to address the excess cost of programs for exceptional students.[171] An eclectic body of experts from several academic areas convened and implemented a practical approach to determine excess cost by delivery system relative to each exceptional student program. This encompassed an assessment of student needs, an establishment of resource models, the isolation of individual cost features, and the calculation of incurred costs for school districts in Iowa.[172]

In the recommendation to the Governor's Office of Illinois, Ernst and Ernst suggested a model for tracking the excess cost of special education.[173] They favored a system heavily dependent on the actual use of resources and related cost during intervals of instruction across the entire curriculum. Variations in planned instructional costs could be traced to student enrollment patterns, resource consumption, and price index fluctuations within the local communities.[174]

In 1974 Bernstein, Kirst, Hartman, and Marshall proposed the use of several research needs based on their review of the literature (a) The correlation between resource utilization, costs, and outcomes of participating students. (b) the least costly method for monitoring and recording exceptional student expenditures, and (c) the method by which past expenditures can be applied to determined current and future expenses. Historically, policy makers have avoided the contributions and suggestions of academic experts and embraced evidence found in empirical investigations to support amendments to their current school funding methods for special education.[175]

Alterations of state funding programs for exceptional students resulted in changes in student placement and their respective pedagogical approaches to serving these students.[176] Empirical support for this assessment of the consequences related to changes in state funding methods for exceptional students was developed by Raphael and Singer who found that student placement was a critical factor at the local level when such placements were associated with funding categories.[177]

According to Bernstein special education funding formulas

> . . . encompasses the mandated procedures, prorating provisions, administrative guidelines, and exceptions or exclusions that determine and regulate the allocation of state and federal funds to districts. The actual impact of a particular procedure cannot be determined without reference to other factors ---legal, political social, educational—that interact with its actual operation.[178]

Responsibility for funding exceptional student program has fallen primarily on state and local agencies yet, there have been attempts to legislate additional fiscal responsibility to the federal government.[179] Weintraub, Abeson, and Braddock favored state assumption of excess costs associated with exceptional children.[180] In their opinion, children with handicapping conditions are disenfranchised from equal education opportunity under local fiscal responsibility.[181] Henderson discussed the migration trends of families of children with severe disabilities to localities that provide appropriate services for their children.[182] He supported full state funding of special education costs to avoid unequal tax burden upon school districts that served large numbers of severely handicapped students.[183] Jones and Wilkerson noted the results of Gray's empirical study that indicated an excess financial burden in the San Antonio school districts with high incidence of military families with handicapped children. This problem is compounded in formulas that designate state portions of funding and do not equalize the local effort of participating school districts. According to the authors the excess fiscal responsibility would be removed with full state acquisition of excess cost. [184] Thomas provided one of the few contentions to full state funding of exceptional student costs. She foresaw depletion of state treasury funds in the absence of binding limitations. In her view, increased local responsibility for funding would result in greater discretionary spending. [185]

Federal allocations for exceptional student education have been in the form of flat grants based on the full time equivalent within special education programs.[186] Levin, Cohen, and Colloff recognized the inherent restrictions that often come with state and federal assumption of local educational activities.[187] However, they have empirically demonstrated a minimal correlation of amount of external funding with the degree of state and federal influence on local choices.[188] Federal allocations for exceptional student education have traditionally been flat grants based on the full time equivalent within special education programs.[189] The study performed by the Council for Exceptional

Children showed several states have adopted methods of distributing special education funds to local agencies. They included (a) unit approach, (b) percentage reimbursement, (c) excess cost formula, and (c) the weighted formula approach.[190]

The unit financing approach allocates a fixed amount of money for particular units of instructional categories such as children, teachers, or classroom units. According to Thomas the unit financing approach encourages increased identification of children with mild disabilities because, under this method, each child will generate similar amounts of funding, furthermore, children with mild disabilities are generally associated with a smaller increases in costs. Thomas cited several potential areas of concern in using this approach: (a) extremely large special education enrollments, (b) scarcity of funding resulting in too few classroom or personnel units, and (c) the inability of small districts to raise money for their programs.[191] Moore, Walker, and Holland have noted use of the unit approach as relatively simple to administer and does not mandate labeling of students by type of disability.[192] Hartman stated that efforts to minimize cost while maximizing amount of reimbursement by extending classroom capacity and limiting classroom enrollment per unit have discouraged the mainstreaming of exceptional students. Moreover, the increase in funding in direct proportion to the number of students served provides incentive for districts to overclassify students with little or no movement from these low cost placements. Conversely, he also noted that such a program was a vehicle for eliminating negative stereotypes that are often a by -product of labeling students.[193]

Percentage and reimbursement plans involved state acquisition of all or a portion of special education costs to school districts for providing services to handicapped students. [194] Funds are allocated for a certain number of resource classrooms or teacher that are the responsibility of districts to fill with appropriate student populations. These formulas support a portion of personnel salaries or weighted costs of the specific programs or allocated units and offer the least incentive for overclassification.[195] According to Thomas, these formulas neutralize many of the problems associated with other funding methods, however, there is the temptation for districts to place students in the least costly programs in an effort to minimize incurred residual costs.[196] With counting of classrooms or teacher units as the formula base, districts tend to fill the classes to capacity and consequently the needs of students are based on program types. Small number of low incidence classifications could potentially generate a shortage in reimbursement funds necessary to maintain specialized units. Resource-based formulas cause little incentive to overclassify students because the implementation of program units are primarily based on expected state averages and may contain population caps which limit funding.[197] Garms, Guthrie, and Pierce favored the use of the reimbursement approach because it allows local leeway in making decisions relative to district needs without threat or fear of state sanctions.[198] Some scholars have suggested the use of this model to promote appropriate student placement within school districts. The majority of states who use this model have legislative provisions to regulate system abuse. [199]

Cost-based formulas provide additional revenues to school districts to fund a portion of or all cost of providing exceptional student programs and related services. These formulas require school districts to establish per pupil cost of educating a disabled child and then subtract from this amount the cost of educating a non-disabled pupil in the same district.[200] Percentage cost formulas entails a percentage of approved special education costs supported by the state with the residual designated as the responsibility of the local district. Excess cost programs, the most widely associated with special education, determine the additional costs of educating special education students above the cost for students in general education programs. Under this system, all or a portion of the excess costs are reimbursed to school districts by the state. [201] Cost based formulas provide school districts with the least incentive to overclassify due to its incurred responsibility for a fraction of increased costs.[202] Fully funded excess cost programs provide districts with incentives to make the best placement for students because the risk of additional cost are eliminated.[203] Hartman proposed an alternative approach to defining excess cost based on supplemental programs and those programs chosen in lieu of general education services.[204] Critics of the excess cost programs have argued that such a program encourages the improper labeling of students as handicapped compounded by the inconsistencies across states in the methods of identifying students for exceptional student programs and related services. However, advocates of the excess cost formula maintain that the program provides incentives for an accurate assessment of costs by school districts, a prelude to measuring the efficient allocation of educational resources.[205]

States may choose to fund programs by using a system of weights which recognize that the costs associated with exceptional student programs are greater than the cost of educating the normal child in basic education programs.[206] The concept of using weighted pupils in school finance distribution can be traced to the early writings of Paul R. Mort.[207] Cost differentials related to instructional programs, sparsely populated school districts, adverse environments, as well as exceptional students were prevalent among state adopted formulas.[208] Foshee, Garvue, and Newcomer investigated exceptional student placement trends in Florida under its weighted classification of students.[209] Collected data indicated an inclination of districts to promote self contained classrooms for identified students.[210] It also revealed a pattern of assigning borderline students to the larger weighted instructional program. [211] Hartman affirmed the Florida study in that he believed that weighted formulas would result in excessive assignment of students to programs with higher cost factor indices.[212] Yates feared incentives to over classify students would hinder the assurance of an appropriate education for handicapped student in the least restrictive environment.[213] Jordan noted limitations in the use of weighted pupils in that established cost factors have historically reflected only averages and may generate inadequate funding for all school districts.[214]

According to Burrup and Brimley "weighted factors are perhaps the best measure of the amount of additional resources and services needed to provide all students, regardless of their personal or environmental handicaps, with reasonably equal educational programs."[215] Alexander and Jordan asserted that weighting exceptional student provides opportunity for instructional creativity and innovation at the district level.[216] They strongly believed that the allocation of funds based on the students receiving services creates an auspicious learning conditions.[217] Garms, Guthrie, and Pierce acknowledged the potential abuse of weighting pupils but embraced the concept in light of its propensity to facilitate mainstreaming of exceptional students.[218] Johns also recognized the shortcomings of utilizing cost differentials, nevertheless, he viewed weighted formulas as sound educational policy.[219]

Growth in expenditures for exceptional student education has placed a strain on the financial coffers of both state and local budgets. The volume of special education funding requirements has become competitive with regular education for an already scarce amount of educational resources.[220] Attempts to obtain adequacy, efficiency, and equity in special education funding encounter significant problems and contingencies similar to those encountered in funding general education services.[221] The creation, approval, and implementation of a funding formula for special education is a complex task for state education policy makers.[222] In the final analysis programming, cost determination, level of funding, and types of formulas adopted by states are produced through negotiation and compromise within state legislatures.[223]

Summary

This chapter contained a discussion of prominent court cases influential in establishing equal educational opportunity for the disabled. The chapter also included a commentary on the conceptualization of equity and related court cases. Subsequently there is an analysis of the policy issues that must be considered in the development of exceptional student funding programs.

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CHAPTER III
METHODOLOGY

The intent of this chapter is to explain the empirical design used in this study to determine the effects of weighted cost factors for exceptional students on the equity of a state school finance program. An analysis and description of the school finance system chosen for this study is contained within the first section of this chapter. Next, weighted program cost factors for the latest available fiscal year, 1995-96, are identified. Each cost factor represented additional revenues that were allocated to fund exceptional student programs. Subsequently there is a description of the manipulation of the independent variable (weighted program cost factors) and the generally accepted indices used to describe equity in public school finance as it relates to the dependent variable (revenues per pupil).

The Florida Education Finance Program

The Florida Legislature's obligations to establish, maintain, and operate the public schools are described in the education article of the state constitution. Florida's constitution specified a "uniform system of free public schools".[1] In 1973, the legislature adopted the Florida Education Finance Program (FEFP) to provide expenditures for general education.[2] The legislation was designed

> To guarantee to each student in Florida public schools system the availability of programs and services appropriate to his education needs which are substantially equal to those available to any similar student notwithstanding geographic differences and varying local economic factors.[3]

"To provide for the equalization of educational opportunity" the FEFP recognized "(1) varying local property tax bases, (2) varying program cost factors, (3) district cost differentials, and (4) differences in per student cost for equivalent education programs due to sparsity and dispersion of student population."[4] The Florida Education Finance Program based financial support for education upon the number of individual students participating in a particular educational program rather than the number of teacher units or the number of classroom units. Funds were determined by multiplying the number of "full-time equivalent" students (FTE) in each educational program by the "cost factor" of that program to obtain a "weighted full-time equivalent" (WFTE). Weighted FTE's were multiplied by a "base student allocation" (BSA) and by the "district cost differential" (DCD) to determine the basic FEFP funds.[5] Through the General Appropriations Act, program cost factors were determined and represented the relative cost differences among 37 categories of educational programs.[6]

During the 1995-96 school year only California, Texas, and New York had higher exceptional student populations than Florida.[7] Formal empirical analysis determined the foundation system in the state of Florida to be among the most equitable funding schemes in the United States.[8]

During the 1995-96 school year the Florida Legislature contributed 50 percent of the resources allocated to school districts; 42.5 percent of district funds were generated through levys on local property.[9] Federal allocations, which accounted for 7.5 percent of financial support, were not a part of the data analysis in this investigation. Those funds were excluded because this research study addressed the extent to which Florida's legislature provided an equitable distribution of educational dollars to its K-12 student population. The attainment of this goal was of interest to education finance scholars as well as state legislators.

Florida school districts received state support through legislative appropriations to fund the basic FEFP, Florida Lottery appropriations, specific categorical programs, special allocations, and capital outlay. Levys on property in each school district were the primary sources of local support for Florida's educational programs. Congress provided Federal dollars to school districts "directly and through the state" to support specific programs such as: adult education, job training, title one programs, and food service.[10]

Data used in this analysis was taken from the 1995-96 fiscal year summaries of the 67 school districts in the state of Florida. The cumulative FEFP calculation for 1995-96 was 8.355 billion.[11] Capital outlay and debt service was excluded from this total. The number of unweighted full-time equivalent (FTE) students was 2.31 million. The total amount of weighted full-time equivalent (WFTE) students was 2.87 million.[12]

Major Features of the FEFP

Florida law requires specific guidelines for the computation of full-time equivalent (FTE) students. Total district school populations are based upon the number of program surveys administered during the fiscal year. A program survey was "made by each district by aggregating the full-time equivalent student membership of each program by school and by district."[13] Except for basic and special programs, that were allowed a maximum of nine, the Florida Department of Education determined the number of surveys.[14]

The total FTE membership of each program was multiplied by respective program cost factors that were established in the annual General Appropriations Act.[15] Additional funds were allocated for students who were more expensive to educate than others. This guaranteed each of the 37 programs an equitable share of educational dollars associated with relative costs. The Florida Legislature determined cost factors based on a three-year average cost per student for each of the programs. The cost of an FTE for a basic program, Grades 4-8 was used as the base cost factor with a value of 1.00.[16] The program cost factors are applied to FTE to obtain the weighted FTE (WFTE). Weighted FTE's are then used in subsequent calculations within the formula.[17]

The base student allocation (BSA) was determined by the Florida Legislature and ordained in the General Appropriations Act.[18] The (BSA) for the 1995-96 fiscal year, $2912.14, was multiplied by the weighted FTE to obtain funding per WFTE in all programs.[19] This computation created the level of funding per pupil necessary to ensure each child a defined baseline education. The WFTE was used throughout the remaining calculations in the formula.

In 1995-96 the Commissioner of Education computed the district cost differential (DCD) by using the mean of the most recent three years of the Florida Price Level Index developed by the Department of Education. The DCD was multiplied by the product of each district's WFTE and BSA to adjust funding for the relative cost of living in each county. In 1995-96 the range of the DCD was .9023 in Calhoun County to 1.09 in Monroe County. " To apply the price level index to the salary component of school district operating costs, the averaged index is multiplied by .008 and .200 is added to the product.[20]

A declining enrollment supplement was provided to school districts that experienced extreme reductions in student enrollments relative to the previous year. Fifty percent of the decline in unweighted FTE, in eligible districts, was multiplied by the previous year's calculated FEFP per unweighted FTE and added to the district allocation. To obtain the correct amount of supplemental funding the calculated FEFP is determined by multiplying the product of WFTE and BSA by the DCD. In the case where a district moved a program to an institution not under the auspice of the school board, the decline is multiplied by a factor of 0.15.[21] Nine districts qualified for this supplement.[22]

The FEFP addressed the relative increase in expenses of smaller school districts through a statutory formula in which the foundation is a sparsity index. The index is calculated "by dividing FTE of the district by the number of permanent senior high school centers (not to exceed three)." Provisions in the General Appropriations Act limited participation to districts with 20,000 or fewer FTE where allocations were subject to changes based on the relative wealth of the district. If the district's value of maximum discretionary levy were greater than the state's, the sparsity supplement is negatively adjusted. The adjustment is equal to the district's FTE multiplied by the per FTE amount by which the district's maximum discretionary value per FTE exceeds the state average. The FEFP limited the sparsity entitlement to $20,000,000 statewide[23]

The Safe Schools allocation was added to the FEFP.[24] The legislature appropriated $50,350,000 to provide safe school activities in the form of after school programs for middle school students, enhanced learning environments, and alternative school programs for adjudicated youths. Allocations were prorated with 67 percent "based on the latest official Florida Crime Index provided by the Department of Law

Enforcement and 33 percent based on each district's share of the state's total weighted enrollment." Each district determined the amount of total allocation used for authorized Safe School activities based on a review of existing programs and priorities.[25]

The 1995-96 legislature added the remediation reduction incentive to the FEFP calculation in two parts.[26] Part one allocated "$20,000,000 based on each district's share of the state total number of students who pass one or more of the college placement test." Part two allocated $10,000,000 based on each district's enrollment in Math and English courses.[27]

A further adjustment added to the FEFP allocation was the discretionary tax equalization supplement.[28] The supplement was provided for districts whose discretionary (.51 mills) and additional (.25 mills) levies generated less than $50 per FTE. This ensured each district $50 per FTE when added to the total generated by the .25 mills.

The FEFP contained a hold harmless adjustment to provide additional revenue that guaranteed each district a 1.5 percent increase in potential funding for 1995-96 over 1994-95 per WFTE. The calculation contained "state FEFP major categorical funds, discretionary lottery funds, required local effort proceeds, discretionary tax equalization funds, and total potential discretionary tax proceeds".[29]

The 1995 legislature provided a disparity compression adjustment to the FEFP to address district funding per FTE variations below the state mean.[30] Districts below the state average received additional funding based on the greater of two criterion: funding per FTE less than one standard deviation below the mean of all school districts or funding per FTE less than the average of all school districts.

The previous calculations totaled state and local FEFP funds ($8.355 billion). The required local effort (RLE) of $3.39 billion was subtracted from this amount. The RLE was the total revenue obtained via ad velorem taxes provided by each district necessary to participate in the FEFP. The state regulated the total amount of required local effort. To obtain the required local effort, the Department of Education certified to the Commissioner of Education the latest available estimate of nonexempt assessed valuation of property for school purposes in each school district. The commissioner calculated a millage rate that generated the prescribed aggregate RLE of $3,391,838,625. The necessary funds were obtained by applying the mill rate to 95 percent of the total nonexempt assessed valuation of property in the state.[31]

The 1995-96 legislature determined the statewide average millage rate to be 6.22. District shares of the aggregate RLE were adjusted by a factor intended to equalize the required local effort.[32] The adjustment was calculated by multiplying the equalization factor for the previous year's assessment roll for each district by 95 percent of the nonexempt assessed valuation for school purposes shown on the tax roll, and by the 1994-95 RLE millage without any equalization adjustment. The computed dollar amount was the additional RLE for the 1995-96 fiscal year.

The equalization factor was computed as the quotient of the 1994-95 assessment level of the state as a whole divided by the 1994-95 assessment level for each district, from which was subtracted 1. The total of additional RLE for the previous year's assessment level for each district was converted to a millage rate, based on the positive or negative variation of each district from the state average assessment level. This computed millage rate was added to the state average RLE millage rate.

A further adjustment to the RLE included an amount for fees of adult students who were not exempt from paying fees.[33] Students who were enrolled in adult general education and vocational adult programs reported for funding through the FEFP were charged matriculation fees, except for those exempted by law.[34]

The total required local effort computation was subtracted from the total FEFP allocation. The net result was the state's portion of the FEFP that amounted to $5,267,827,380.[35] State FEFP dollars were subjected to adjustments for the previous year. Adjustments included funds allocated to a district for adjudication of litigation, arithmetical errors, assessment roll changes, FTE membership errors, or errors revealed in audit reports.

To the adjusted state dollars was added the caps adjustment supplement.[36] The supplement was appropriated to fund WFTE over group ceilings, based on program priorities. After all calculations and allocations, 10 percent of any remaining FEFP funds were used to subsidize WFTE that were over program group ceilings.[37] These adjustments resulted in net state FEFP dollars. Previous FEFP adjustments (district cost differential, declining enrollment supplement, profoundly handicapped, sparsity, safe schools allocation, remediation reduction incentive, discretionary tax equalization, hold harmless adjustment, and disparity compression adjustments) were a second source of FEFP revenues for the sixty-seven school districts.

An additional source of revenue for current year operation expenditures was the discretionary tax.[38] The FEFP permitted two types of discretionary tax: current operations and capital outlay and maintenance. To supplement current operating funds, each district was allowed to levy a non-voted millage rate on the nonexempt assessed valuation of the property in respective districts. The legislature set the maximum rate for the 1995-96 fiscal year at 0.510 mills, however, an additional levy, not to exceed 0.25 mills, was permitted to generate an amount no greater than $50 per FTE per student. The capital outlay and maintenance maximum levy was set at 2.0 mills and was excluded from this study.

District discretionary lottery funds were added to the net state FEFP allocation.[39] The legislature appropriated $463,290,000 to fund the implementation of school improvement plans in each district. Lottery entitlements were calculated by prorating the FEFP base funding (WFTE x BSA x DCD) with the amount of lottery appropriations.

The FEFP contained categorical program funds and special allocations that represented additional revenue for school districts. Categorical program funds, intended to assist in the development and maintenance of activities that indirectly supported FEFP programs, were added to the net state FEFP.[40] The programs were Comprehensive School Construction and Debt Service, School Lunch/Match Breakfast Supplement, Instructional Materials, Library Media Materials, Student Transportation. The 1995-96 legislature appropriated $10,000,000 in FEFP funds intended to serve as matching funds to permit districts to earn additional funds based on the Occupation Forecasting Conference incentives.[41] Districts received these funds based on the number of trained workers who emerged from vocational programs as well as enrollment, training, and placement of poor and disabled individuals.

The final additions to the net state FEFP were special allocations. Special allocations entailed all residual sources of state revenue for school districts. These funds were provided for programs such as Grades K-8 Summer School, Blue Print for Career

Preparation, Pre-School Projects, Public School Technology, Class Size Reduction, Innovative Practices, Full Service Schools, HIV/AIDS Education, Cities in Schools, and Performance Based Incentives.

The 1995-96 fiscal year FEFP was calculated five times. The first calculation was completed in June, after the legislative session. The second in July upon receipt of the certified tax roll from the Department of Revenue. The third calculation was in November, after receipt of school membership surveys for October. The fourth calculation was performed in February, after receipt of school membership surveys for March. The final calculation was made after receipt of school district membership surveys for June.[42]

Weighted Program Cost Factors

Vertical equity recognizes that students are different and requires that unequals receive appropriately unequal treatment. Differences among children due to characteristics of the individual child are generally accepted as cause for special consideration in school-finance equity. Most school finance programs recognize the need for additional resources in order to achieve the educational goals established for these children.[43]

One of the major goals of the Florida Legislature, when it enacted the FEFP, was to ensure that each program received its equitable share of funds in relation to its relative cost per pupil.[44] Through the use of annual program cost reports, the cost per FTE of each program was used to establish an index of relative costs per basic FTE. Grades 4-8 established the base of 1.000. To neutralize extreme or rapid changes in program cost factors, the legislature adopted a three-year average in calculating program cost factors.

"Multiplying the FTE student for a program by its cost factor" produced "weighted FTE." Program cost factors for the 1995-96 FEFP, relevant to this study, consisted of Group One, Group Two, and Group Three program cost factors. Each cost factor is listed in Table 1.

Table 1

Weighted Program Cost Factors Fiscal Year 1995-96

Group One Program Cost Factors (Basic Programs)

BASIC K-3	1.041
BASIC 4-8	1.000
BASIC 9-12	1.198
K-3 MAINSTREAM	2.082
4-8 MAINSTREAM	2.000
9-12 MAINSTREAM	2.396

Group Two Program Cost Factors (At Risk/Exceptional Student Programs)

DROPOUT PREVENTION	1.495
TEENAGE PARENT	1.495
INTENSIVE ENGLISH ESOL K-3	1.311
INTENSIVE ENGLISH ESOL 4-8	1.262
INTENSIVE ENGLISH ESOL 9-12	1.310
EDUCABLE MENTALLY	2.195
HANDICAPPED	2.977
TRAINABLE MENTALLY	3.285
HANDICAPPED	12.971
PHYSICALLY HANDICAPPED	5.313
PHYSICAL/OCCUPATIONAL THERAPY	2.992
PT	16.687
SPEECH, LANGUAGE, HEARING PT	4.660
SPEECH, LANGUAGE, HEARING	3.878
VISUALLY HANDICAPPED PT	2.751
VISUALLY HANDICAPPED	2.769
EMOTIONALLY HANDICAPPED PT	1.920
EMOTIONALLY HANDICAPPED	1.747

SPECIFIC LEARNING DISABILITY PT	12.522
SPECIFIC LEARNING DISABILITY	4.357
GIFTED PT	1.747
HOSPITAL/HOMEBOUND PT	12.522
PROFOUNDLY HANDICAPPED	4.375
AGRICULTURE	1.612
BUSINESS AND OFFICE	1.254
DISTRIBUTIVE	1.176
DIVERSIFIED	1.241
HEALTH	1.347
PUBLIC SERVICE	1.076
HOME ECONOMICS	1.272
INDUSTRIAL	1.764
EXPLORATORY (6-12)	1.215
VOCATIONAL MAINSTREAM	1.860

Group Three Program Cost Factors (Adult Education Programs)

Job Preparatory Vocational

AGRICULTURE	1.454
BUSINESS AND OFFICE	1.299
DISTRIBUTIVE	1.328
DIVERSIFIED	0.932
HEALTH	1.451
PUBLIC SERVICE	1.113
HOME ECONOMICS	1.293
INDUSTRIAL	1.421

Supplemental Vocational

AGRICULTURE	1.807
BUSINESS AND OFFICE	1.371
DISTRIBUTIVE	1.038
HEALTH	1.442
PUBLIC SERVICE	1.297
HOME ECONOMICS	1.290
INDUSTRIAL	1.778

General Education Programs

ADULT BASIC SKILLS	0.766
ADULT SECONDARY EDUCATION	0.853
ADULT DISABLED	0.994

Research Design

The study was conducted to answer the research question " what were the effects of additional revenues for weighted program cost factors on the equity of a state school finance system?" The Florida Education Finance Program (FEFP) was the state school finance system selected for the study. To answer the question, two conditions were established as part of the empirical investigation. Under the first condition, the equity of the FEFP was computed without additional revenues for weighted program cost factors included in the computation. Each student was valued at 1.00. Under the second condition, the equity of the FEFP would be determined with additional revenues represented by Group One, Group Two, and Group Three cost indices. Aggregate measures were performed through the addition of each group of cost factors to the measurement of equity under the condition of no additional revenues for weighted program cost factors. The difference between the calculations would be the effects of additional revenues for each group of weighted program cost factors and the aggregate of all weighted program cost factors on the equity of a state school finance system.

The development of the research design consisted of separating the FEFP into Group Weighted Program Cost Factors which represented sources of revenue for school districts. As these elements were added to the FEFP, the accumulation of each element had the potential effect of changing the equity of the finance program. Consequently, the variation in the distribution of revenues could increase or decrease depending on the total effect of each group of weighted cost factors in the formula. Results would indicate an increase or decrease in the equity of the school finance program due to the influence of each group of weighted program cost factors. Ultimately, the design in this investigation would determine the equity of the FEFP and the influence of each group of weighted cost factors and establish the effects of additional revenues for weighted program cost factors on the equity of the FEFP.

In summary, measures of equity were applied under two conditions, unweighted and weighted program cost factors, which represented additional revenues for school districts. The difference in the values of the measures of equity between the two conditions represented the effects of additional revenues for weighted program cost factors on the equity of the FEFP.

Equity Measurement

The standard measures of equity used in this study were the mean, range, restricted range, federal range ratio, variance, standard deviation, coefficient of variation, McLoone Index, and Gini coefficient. The variable measured was revenues per pupil per district. These were measures of horizontal and vertical equity.

Simple regression and correlation were used to measure fiscal neutrality. The dependent variable was revenues per pupil per district. The independent variable was the assessed valuation of nonexempt property in each district.

Mean

The mean is a measure of the central tendency of the distribution of observations. It represents the average value in the distribution of revenues per pupil per district. The mean takes into account all the observations in the distribution. The mean was calculated with the following formula:

$$\Sigma\ Xi / \Sigma\ Pi$$

Where Σ is the sum of all districts, Xi is revenue per pupil per district i, and Pi is the number of unweighted FTE per district.[45]

Range

The range is the difference between the highest and lowest observations in a distribution.[46] The computed range in this study was the difference between the highest and the lowest revenues per pupil per district. Smaller range values meant smaller variations in the distribution of revenues per pupil per district. The smaller the variation the better the equity of the distribution of revenues. When applied in equity studies, the range is very limited. It is based only on two values, does not indicate the pattern of variation, and is not sensitive to changes within the distribution.[47] The range was calculated using the following formula:

$$\text{Highest } Xi - \text{Lowest } Xi$$

Where Xi is the average revenue in district i.[48]

Restricted Range

The restricted range is the difference between the observation at the 95th percentile of the distribution and the 5th percentile. Due to the sensitivity of the range to extreme values, the restricted range eliminates values below the 5th percentile and above the 95th percentile. The smaller the value of the restricted range, the smaller the variation in the distribution of revenues per pupil per district. The smaller the variation, the more equitable the distribution of revenues. However, like the range the restricted range is subject to similar limitations as a measure of equity.[49]

The restricted range was calculated with the following formula:

Xi at the 95 percentile - Xi at 5 percentile

where Xi was the revenue per pupil in district i.[50]

Federal Range Ratio

The federal range ratio is the restricted range divided by revenue per pupil per district at the 5th percentile. The value is expressed as a ratio. The smaller the value of the federal range ratio, the smaller the variation in the distribution of revenues per pupil per district. The smaller the variation, the more equitable the distribution of revenues. The federal range ratio has the same limitations as the restricted range.[51]

The restricted range was calculated with the following formula:

Restricted Range / Xi at 5th percentile

Where Xi was the revenue per pupil in district i.[52]

Variance

The variance means the average of the squared deviations from the mean. There is a direct relationship between the value of the variance and the variation within the distribution of revenues per pupil per district.[53] The smaller the variance, the more equitable the distribution of revenues per pupil. Thus far, it is the only equity index that takes into account all values within a distribution.

The variance was calculated with the following formula:

$$\Sigma\ [Pi\ (Xp - Xi)^2\ ]\ /\ (\Sigma\ Pi)$$

where Σ is the sum of pupil in all districts, Pi is the number of weighted FTE in district i, Xp is the mean revenues per weighted FTE, and Xi is the revenue per weighted FTE in district i.[54]

Standard Deviation

The standard deviation is the square root of the variance. The smaller the value of the standard deviation, the smaller the variation in the distribution of revenues per pupil per district. The smaller the variation, the more equitable the distribution. The advantage of the standard deviation is that all observations are included in the calculation and the units of measurements are in the original scale. Nevertheless, the standard deviation is sensitive to outliers.[55] The standard deviation was calculated with the following formula:

$$\sqrt{[\Sigma Pi\ (Xp - Xi)^2 / \Sigma Pi]}$$[56]

Coefficient of Variation

The coefficient of variation is the standard deviation divided by the mean or the square root of the variance divided by the mean. It is expressed as the ratio of the standard deviation of the distribution to the mean of the distribution. The smaller the value of the coefficient of variation, the smaller the variation in the distribution of revenues per pupil per district. The smaller the variation, the more equitable the distribution of revenues. The coefficient of variation is sensitive to outliers but not to changes in scale.[57]

The coefficient of variation was calculated with the following formula:

$$\sqrt{[\Sigma P(Xp - Xi)^2 \div \Sigma Pi]} \div Xp$$

Where Xp is the mean revenues per pupil for all districts.[58]

McLoone Index

The McLoone Index is the ratio of the sum of revenues per pupil per district for all districts below the median to the sum of revenues that would be required if all districts below the median were at the median level of revenues. The larger the value of the

McLoone Index (up to 1), the closer the lower half of the distribution is to the median of the distribution.

The McLoone Index was calculated with the following formula:

$$\Sigma\,(1\ldots j)\ PiXi \div Mp\ \Sigma\,(1\ldots j)\ Pi$$

where districts 1 through j are below the median, Σ is the sum of pupils in all districts i through j, Pi is the number of pupils in district i, Xi is the revenue per pupil in district i, and Mp is the median revenue per pupil for all districts.[59]

Gini Coefficient

The Gini coefficient indicates how far the distribution of revenues is from providing each percentage of students with the same percentage of revenues. The smaller the value of the Gini coefficient, the more equitable the distribution of revenues in providing a specified percentage of students with the same percentage of revenues. Values range from zero to one. The coefficient compares revenues at each level with revenues at every other level and is sensitive to changes throughout the distribution. However, it is not sensitive to outliers.[60]

The Gini coefficient was calculated with the following formulas:

$$\Sigma i\ \Sigma j\ Pi\ Pj\ (Xi-Xj)\ /\ 2(\Sigma i\ Pi)^2\ Xp$$

where Σ is the sum for all pupils in districts i, Pj is the number of pupils in district j, Xi is the revenue per pupil in district i, Xj is the revenue per pupil in district j, and Xp is the mean revenue per pupil for all districts.[61]

Previous measures addressed the dispersion or variation of a single variable, revenues per pupil per district.[62] Two other measures, correlations and slopes, are regression based measures which describe a relationship between two variables.[63]

Simple Regression

Simple regression describes the degree to which two variables are related. In this study the two variables are wealth (assessed valuation of property) in each school district (independent variable) and the corresponding revenues per pupil (dependent variable). In the study of school finance, the two variables are used to describe the fiscal neutrality of a state school finance system.[64]

The correlation coefficient has values that range form –1.0 to +1.0. When two variables are positively associated, larger values of one tend to be accompanied by larger values of the other. When two variables are negatively related, larger values in one tend to be accompanied by smaller values of the other. A value of +1.0 indicates a perfect positive linear relationship and a value of –1.0 a perfect negative linear relationship. A value of 0 indicates no linear relationship between the two variables.[65] A fiscally neutral system is indicated by the lack of a relationship between wealth and revenue per pupil for educational programs.

Scatter plots are graphs of the bivariate data. The value of the independent variable is plotted on x-axis and the dependent variable on the y-axis. The square of the simple correlation, the coefficient of determination, is the proportion of variation in the dependent variable explained by the relationship to the independent variable.[66]

The simple correlation is the Pearson correlation coefficient and was calculated using the following formula:

$$\Sigma Pi(Xi-X)(Wi-W)/$$

$$\sqrt{[\Sigma\ Pi\ (Xi-X)^2]}\ \sqrt{[\Sigma\ Pi\ (Wi-W)^2]}$$

where Σ is the sum of pupils in all districts, Pi is the number of pupils in district i, X is the mean revenue per pupil for all districts, Wi is the wealth per pupil in district i, and W is the mean wealth per pupil for all districts.[67]

Slope of the Regression Line

The regression equation is used to describe the relationship between two variables. That equation is:

$$Y = a + b X$$

Where y is the estimated value, a the intercept (value of y corresponding to x=0), and b the slope or the regression coefficient (line of best fit describing the relationship between the independent and dependent variables). The slope of the regression line measures the magnitude of the relationship between two variables. The slope indicates the change in the dependent variable associated with a one-unit change in the independent variable. A fiscally neutral public school system has a slope of zero. The closer the value of the slope to zero, the more equitable the distribution of revenues.[68]

The calculation of slopes was based on the mean values of the independent and dependent variables associated with a one-unit change in the independent variable. The following formula was used to calculated the slope:

$$\Sigma\ [Pi\ (Xi - X)(Wi - W)] / \Sigma\ [Pi\ (Wi - W)^2]$$

where Σ is the sum of pupils in all districts, Pi is the pupils in district i, Xi is the revenues per pupil in district i, X is the mean revenues per pupil in all districts, Wi is the wealth per pupil per district, and W is the mean wealth per pupil per district.[69]

Summary

Within this chapter, an analysis of the design used in the study was provided. The chapter began with an overview of the Florida Education Finance Program, which was chosen for this study. Next, there was a discussion of weighted program cost factors which provide additional resources for exceptional student programs. The chapter ended with a review of the measures of equity used in this study.

Notes

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[1] Fla. Const. Of 1968, art. IX, § 1. "System of Public Schools. Adequate provision shall be made by law for a uniform system of free public schools and for the establishment, maintenance, and operation of institutions of higher learning and other public education programs that the needs of the people may require."

[2] Roe. L. Johns, The Evolution of the Equalization of Educational Opportunity in Florida 1929 to 1976 (Gainesville, Fla.: Institute for Educational Finance, University of Florida, 1976) : 1995-96 FEFP, 1.

[3] Fla. Stat. 236.012(1).

[4] 1995-96 Florida Education Finance Program Statistical Report, Financial Management Section of the Bureau of School Business Services, Florida Department of Education Statistical Report, 1.

[5] Ibid.

[6] Fla. Stat. 236.081(1) (c).

[7] U.S. Department of Education, Eighteenth Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act. 1996 (Washington, D.C., 1996)

[8] Mary Chambers, The Effects of Additional Revenues From Capital Outlay on the Equity of A State School Finance System (Doctoral Dissertation, University of Florida, 1996); Michael O'Loughlin, A Study of the Effects of the Sparsity Supplement on the Equity of Florida Education Finance Program (Gainesville, FL: UCEA Center for Education finance, 1992); Steven D. Stark, An Examination of the Florida Lottery (Gainesville, FL: UCEA Center for School Finance, 1991); Steven Starke, "The Florida Education Lottery: Its As a Substitute For Existing Funds and Its Effects on the Equity of Public School Funding (Doctoral Disseration, University of Florida, 1991).

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[9] FEFP, 1.

[10] Ibid.

[11] 1995-96 FEFP Final Calculation.

[12] Profiles of Florida School Districts 1994-95 Financial Data, 5.

[13] Fla. Statute, 236.081 (a)

[14] Ibid.

[15] Fla. Statute 231.081 (c)

[16] 1995-96 FEFP, 12.

[17] Office of Program Policy Analysis and Government Accountability Report no. 95-50. Florida's Education Funding System.

[18] Fla. Statute, 236.081 (b)

[19] FEFP, 14.

[20] 1995-96 FEFP,15; 236.081 (2)

[21] 1995-96 FEFP, 13; Fla. Stat. 236.081(7)

[22] 1995-96 Final Calculation.

[23] FEFP, 16.

[24] Ibid.

[25] Ibid.

[26] FEFP, 17.

[27] Ibid.

[28] Ibid.

[29] Ibid.

[30] FEFP, 17

[31] Fla. Stat. 236.081 (4) (b)., FEFP, 18.

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[32] Fla. Stat 236.081 (4)(b)

[33] Fla. Stat. 236.081 (5)(f).

[34] FEFP, 18.

[35] 1995-96 FEFP Final Calculation

[36] Fla. Stat. 236.081 (10)

[37] Fla. Stat 236.081(11)

[38] Fla. Stat. 236.25(2)

[39] 1995-96 FEFP, 20

[40] Fla. Stat. 236.081(5)

[41] Fla. Stat. 216.136

[42] 1995-96 FEFP, 23

[43] Robert Berne and Leanna Stiefel, The Measurement of Equity in School Finance (Baltimore: The Johns Hopkins University Press, 1984), 13-14.

[44] FEFP, 12.

[45] R. Craig Wood and David Thompson, Educational Finance Law: Constitutional Challenges to State Aid Plans: An Analysis of Strategies (Topeka: National Organizaton on Legal Problems in Education, 1996), 46; David C. Thompson, R. Craig Wood, and David S. Honeyman, Fiscal Leadership for Schools: Concepts and Practices (N.Y.: Longman Publishing Group, 1994), 252.

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[48] Robert Berne and Leanna Stiefel, "Concepts of Equity and their Relationship to State School Finance Plans," Journal of Education Finance 5 (1979): 130. Wood , Thompson, and Honeyman, 247.

[49] Thompson, Wood, and Honeyman, 248; Berne, Selected Papers, 21.

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[51] Berne and Stiefel, Measurement of Equity, 20; Deborah Verstegen, "Equity in State Education Finance: A Response to Rodriguez," Journal of Education Finance 12 (Winter 1987): 319.

[52] David H. Monk, Educational Finance (New York: McGraw-Hill Publishing Company, 1990), 48-50; Thompson, Wood, and Honeyman, 248.

[53] Wood and Thompson, 47; Berne, Selected Papers, 23-24;

[54] Thompson, Honeyman, and Wood, 249; Berne and Stiefel, Concepts of Equity, 131.

[55] James W. Guthrie, Walter I. Garms, and Laurence C. Pierce, School Finance and Education Policy: Enhancing Educational Efficiency, Equity, and Choice (MA: Allyn and Bacon, 1988), 304-305.

[56] Wood, Thompson, and Honeyman, 249.

[57] Wood and Thompson, 48; Guthrie, 305.

[58] Berne and Stiefel, Concepts of Equity, 132; Thompson, Wood, and Honeyman, 249.

[59] Berne and Stiefel, Measurement of Equity, 20; National Center for Education Statistics, Disparities in Public School Spending 1989-90 (Washington, D.C.:U.S. Department of Education, 1995). D-16.

[60] Berne, Selected Papers, 28-32; Berne and Stiefel, Measurement of Equity, 19-21; Thompson, Wood, and Honeyman, 251.

[61] Thompson, Wood, and Honeyman, 251; K. Forbis Jordan and Martin P. Mckeown, "Equity in Financing Public Elementary and Secondary Schools," in James W.Guthrie, School Finance Policies and Practices (Cambridge MA: Ballinger Publishing Company, 1980), 96-97; Berne and Stiefel, Concepts of Equity, 132.

[62] Thompson, Wood, and Honeyman, 251; Berne and Stiefel, Measurement of Equity, 6.

[63] Thompson, Wood, and Honeyman, 251; Guthrie, 208-209.

[64] Wood and Thompson, 48; Berne and Stiefel, Measurement of Equity, 27.

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[65] Allan Agresti and Barbara Finley Agresti, Statistical Method for the Social Sciences (San Francisco: Dellen Publishing Company, 1997)

[66] Berne and Stiefel, Measurement of Equity, 27; Garms, 308.

[67] Thompson, Wood, and Honeyman, 252; Berne and Stiefel, Equity Concepts, 27.

[68] Berne and Stiefel, Measurement of Equity, , 28-29.

[69] Ibid.

CHAPTER IV
DATA ANALYSIS

Included in this chapter is the data analysis for this study. The analysis was performed to address the research question: What were the effects of additional revenues for weighted program cost factors for exceptional students and related services on the equity of a state school finance program? The measures of equity chosen for the study were the mean, range, restricted range, federal range ratio, variance, standard deviation, coefficient of variation, McLoone Index, and Gini Coefficient. The dependent variable measured was revenues per pupil per district. Selected indices were applied to these data in two situations. Situation one consisted of equity measures without the use of weighted program cost factors (UNWFTE). Situation two consisted of equity measures with the use of weighted FTE (WFTE) or program cost factors within groups one, two, and three within the Florida Education Finance Program.

The measures of fiscal neutrality chosen for this study were the correlation coefficient, coefficient of determination and residuals, and slope of the regression line. The resulting measures represented the degree of fiscal of neutrality. The correlation analyzed was wealth (assessed valuation) per pupil per district (independent variable) and revenues per pupil per district (dependent variable).

In the analysis, the four elements of the FEFP that represented sources of additional revenue for school districts were referred to as levels. Level A represented the use of unweighted cost factors. Level B represented UNWFTE + Group One weighted program cost factors. Level C represented the UNWFTE + Group Two weighted program cost factors, Level D represented UNWFTE+ Group Three weighted program cost factors. Level E represented the sum of group one, group two, and group three weighted program cost factors contained in the FEFP. All 67 school districts were included in each level of calculation. Additional revenues for weighted program cost factors were based on full state funding for weighted program cost factors.

Equity Measurement

Mean

The values derived from the calculation of the mean are displayed in Table 1. Under the condition of UNWFTE, the value of the mean at Level A was $3547.90 per weighted FTE. When additional revenues for weighted program cost factors were included in the calculation of the mean, the revenues per pupil per district among various levels increased. The value of the mean increased at Level B (3645.60), Level C (3921.47), Level D (3562.72) and Level E (4213.58). The changes in revenues per pupil per district under this condition were the effects of additional revenues generated by weighted program cost factors.

Table 1

Mean

LEVEL A	UNWEIGHTED FTE[a]	3547.90
Level B	UNWFTE + Group 1 Cost Factors[b]	3645.60
Level C	UNWFTE + Group 2 Cost Factors[c]	3921.47

Level D	UNWFTE + Group 3 Cost Factors[d]	3562.72
Level E	UNWFTE+ Group 1 + Group 2 + Group 3[e]	4213.58

[a] (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[b] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[c] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[d] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[e] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business

and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors)]** x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Range

The values derived from the calculation of the range are displayed in Table 2. When additional revenues for weighted program cost factors were included in the calculation of the range, the variation in revenues per pupil among the levels decreased. Under the condition of UNWFTE the value of the range at Level A was $2161.388 and decreased at Level B ($1088.476) and Level C ($2150.46), and Level E ($2146.77). The value increased at Level E to ($2247.70). The decrease in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for weighted program cost factors.

Table 2

Range

Level A	UNWEIGHTED FTE[f]	2161.38
Level B	UNWFTE + Group 1 Cost Factors[g]	1088.47
Level C	UNWFTE + Group 2 Cost Factors[h]	2150.46
Level D	UNWFTE + Group 3 Cost Factors[i]	2146.77
Level E	UNWFTE + Group 1 +Group 2 + Group 3[j]	2247.70

[f] (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[g] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[h] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[i] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[j] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office,

Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Restricted Range

The values derived from the calculation of the restricted range are displayed in Table 3. When additional revenues for weighted program cost factors were included in the calculation of the restricted range, the variation in the revenues per pupil among the levels decreased. Under the condition of UNWFTE, the value of the restricted range at Level A was $971.72 and decreased at Level B ($452.10), Level C ($534.54), Level D ($971.13), and Level E ($954.90). The decrease in the distribution of the revenues per pupil per district under this condition was the effect of additional revenues for weighted program cost factors.

Table 3

Restricted Range

Level A	UNWEIGHTED FTE[k]	971.72
Level B	UNWFTE + Group 1 Cost Factors[l]	452.10
Level C	UNWFTE + Group 2 Cost Factors[m]	531.54
Level D	UNWFTE + Group 3 Cost Factors[n]	971.13
Level E	UNWFTE + Group 1 + Group 2 + Group 3[o]	954.90

[k] (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[l] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[m] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[n] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[o] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Federal Range Ratio

The values derived from the calculation of the federal range ratio are displayed in Table 4. When additional revenues for weighted program cost factors were included in the calculation of the federal range ratio, the variation in revenues per pupil per district among the levels decreased. Under the condition of UNWFTE, the value of the ratio at Level A was .2945 and decreased at Level B (.1303), Level C (.1444), Level D (.2934) and Level E (.2461). The decrease in the variation of the distribution of the revenues per pupil per district under this condition was the effect of additional revenues for weighted program cost factors.

Table 4

Federal Range Ratio

Level A	UNWEIGHTED FTE[p]	.2945
Level B	UNWFTE + Group 1 Cost Factors[q]	.1303
Level C	UNWFTE + Group 2 Cost Factors[r]	.1444
Level D	UNWFTE + Group 3 Cost Factors[s]	.2934
Level E	UNWFTE + Group 1 + Group 2 + Group 3[t]	.2461

[p] (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[q] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[r] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[s] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[t] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Variance

The values derived from the calculation of the variance are displayed in Table 5. When additional revenues for weighted program cost factors were included in the calculation of the variance, the variation in revenues per pupil among the levels decreased. Under the conditions of UNWFTE, the value of the variance at Level A was 120336.1, decreased at Level B (28754.75), Level C (68924.2), and Level D (119202.6). The variance increased at Level E to (131745.6). The change in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for weighted program cost factors.

Table 5

Variance

Level A	UNWEIGHTED FTE[u]	120,336.00
Level B	UNWFTE + Group 1 Cost Factors[v]	28,754.70
Level C	UNWFTE + Group 2 Cost Factors[w]	68,924.20
Level D	UNWFTE + Group 3 Cost Factors[x]	119,202.00
Level E	UNWFTE + Group 1 + Group 2 + Group 3[y]	131,745.00

u (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[v] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[w] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[x] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[y] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Standard Deviation

The values derived from the calculation of the standard deviation are displayed in Table 6. When additional revenues for weighted program cost factors were included in the calculation of the standard deviation, the variation in the revenues per pupil per district among the levels varied. Under the condition of UNWFTE, the value of the standard deviation at Level A was 346.89 and decreased at Level B (169.57), Level C (262.53), and Level D (345.25). The standard deviation increased at Level E to (362.96). The change in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for weighted program cost factors.

Table 6

Standard Deviation

Level A	UNWEIGHTED FTE[z]	346.89
Level B	UNWFTE + Group 1 Cost Factors[aa]	169.57
Level C	UNWFTE + Group 2 Cost Factors[bb]	262.53
Level D	UNWFTE + Group3 Cost Factors[cc]	345.25
Level E	UNWFTE + Group 1 + Group 2 + Group 3[dd]	362.96

z (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

aa (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[bb] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[cc] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[dd] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Coefficient of Variation

The values derived from the calculation of the coefficient of variation are displayed in Table 7. When additional revenues for weighted program cost factors were included in the calculation of the coefficient of variation, the variation in the revenues per pupil per district among the levels decreased. Under the condition of UNWFTE, the value of the coefficient of variation at Level A was 0.0977, decreased at Level B (0.0465), Level C (0.0669), Level D (0.0969), and Level E (0.0861). The overall decrease in the variation of the distribution of revenues per pupil per district under this condition was the effect of additional revenues for weighted program cost factors.

Table 7.

Coefficient of Variation

Level A	UNWEIGHTED FTE[ee]	0.0977
Level B	UNWFTE + Group 1 Cost Factors[ff]	0.0465
Level C	UNWFTE + Group 2 Cost Factors[gg]	0.0669
Level D	UNWFTE + Group 3 Cost Factors[hh]	0.0969
Level E	UNWFTE + Group 1 = Group 2 + Group 3[ii]	0.0861

ee (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[ff] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[gg] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[hh] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[ii] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

McLoone Index

The values derived from the calculation of the McLoone Index are displayed in Table 8. When additional revenues for weighted program cost factors were included in the calculation of the McLoone Index, the variation in revenues per pupil per district among the levels increased. Under the condition of UNWFTE, the value of the index was 0.97 at Level A, and decreased at Level B (0.96) and Level C (0.94). There was little or no significant change in the McLoone Index at Level D (.97) and E (.97). The decrease in the value of the index under the condition of weighted program cost factors was the effect of additional revenues for weighted program cost factors.

Table 8

McLoone Index

Level A	UNWEIGHTED FTE[jj]	0.97
Level B	UNWFTE + Group 1 Cost Factors[kk]	0.96
Level C	UNWFTE + Group 2 Cost Factors[ll]	0.94
Level D	UNWFTE + Group 3 Cost Factors[mm]	0.97
Level E	UNWFTE + Group 1 + Group 2 + Group 3[nn]	0.97

jj (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

kk (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[ll] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[mm] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[nn] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Gini Coefficient

The values derived from the calculation of the Gini coefficient are displayed in Table 9. Under the condition of UNWFTE, the value of the Gini Coefficient at Level A was (0.042) When additional revenues for weighted program cost factors were included in the calculation of the Gini coefficient, the value of the coefficient decreased at Level B (0.022), Level C (0.003), and Level D (0.004) and Level E (0.039). The decrease in the variation of the distribution or percentage of revenues per percentage of pupils under this condition was the effect of additional revenues for weighted program cost factors.

Table 9

Gini Coefficient

Level A	UNWEIGHTED FTE[oo]	0.042
Level B	UNWFTE + Group 1 Cost Factors[pp]	0.022
Level C	UNWFTE + Group 2 Cost Factors[qq]	0.003
Level D	UNWFTE + Group 3 Cost Factors[rr]	0.004
Level E	UNWFTE + Group 1 + Group 2 + Group 3[ss]	0.039

oo (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[pp] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[qq] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing

PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[rr] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[ss] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Correlation Coefficient

The values derived from the calculation of the correlation coefficient are displayed in Table 10. Under the condition of UNWFTE, the value of the correlation coefficient at Level A was –0.06 indicated no relationship between the independent variable (wealth per pupil per district) and the dependent variable (revenues per pupil per district). The value of the coefficient increased at Level B to (0.07) and Level C (0.14). The value of the correlation coefficient decreased at Level D (-0.05), and Level E (0.04). The effect of additional revenues for weighted program cost factors at Levels B and C was an increase in the strength of the relationship between wealth per pupil per district and revenues per pupil per district. The effect of additional revenues for weighted program cost factors at Levels D and E was a decrease in the strength of the relationship between wealth per pupil per district and revenues per pupil per district. The change in the relationship between the independent variable (wealth per pupil per district) and the dependent variable (revenues per pupil per district) was the effect of additional revenues for program cost factors.

Table 10

Correlation Coefficient

Level A	UNWEIGHTED FTE[tt]	- 0.06
Level B	UNWFTE + Group 1[uu]	0.07
Level C	UNWFTE + Group 2[vv]	0.14
Level D	UNWFTE + Group 3[ww]	-0.05
Level E	UNWFTE + Group 1 + Group 2 + Group 3[xx]	0.04

tt (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[uu] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[vv] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[ww] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[xx] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Variance Explained and Residuals

The values derived from the calculation of the coefficient of determination (variance explained) and residuals are displayed in Table 11. Under the condition of UNWFTE, the value of the coefficient of determination at Level A (0.0036) indicated an insignificant amount of the variance explained by relationship between the independent variable (wealth per pupil per district) and the dependent variable (revenues per pupil per district). Under this condition, a small value at Level A was consistent by reason of the fact that weighted program cost factors aided in providing an equitable distribution of revenues per pupil based on higher pupil costs associated with the characteristics of special students. The value of the residual variance at Level A was (0.9964).

When additional revenues for weighted program cost factors were included in the calculation of the coefficient of determination, the percentage of variance in the distribution of revenues per pupil explained by the relationship to wealth per pupil per district varied. The value of the coefficient of increased at Level B (0.0049) and Level C (0.0196). The value of the coefficient decreased at Level D (.0025) and Level E (.0016). The change in the percentage of variation in the distribution explained by the relationship to wealth per pupil per district was the effect of additional revenues for weighted program cost factors at the level examined.

The value of the residual variance at Level A was (.9964). When additional revenues for weighted program cost factors were included in the calculation, the values of the residual variances decreased at Level B (0.9951) and Level C (.9804). The value of the residual variances increased at Level D (.9975) and Level E (.9984). The change in the values of the residual was the effect of additional revenues for weighted program cost factors.

Table 11

Coefficient of Determination and (Residuals)

Level A	UNWEIGHTED FTE[yy]	.0036 (.9964)
Level B	UNWFTE + Group 1 Cost Factors[zz]	.0049 (.9951)
Level C	UNWFTE + Group 2 Cost Factors[aaa]	.0196 (.9804)
Level D	UNWFTE + Group 3 Cost Factors[bbb]	.0025 (.9975)
Level E	UNWFTE + Group 1 + Group 2 + Group 3[ccc]	.0016 (.9984)

[yy] (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[zz] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[aaa] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[bbb] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[ccc] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Slope of the Regression Line

The values derived from the calculation of the slope of the regression line are displayed in Table 12. Scatterplots are displayed in Appendix A. Under the condition of UNWFTE, the value of the slope at Level A (0.00) indicated no change in revenues per pupil per district when wealth (assessed valuation) per pupil per district changed 1 unit ($1.00 per pupil per district).

When additional revenues for weighted program cost factors were included in the calculation of the slope, the variation in the distribution of revenues per pupil per district as wealth per pupil per district changed by $1.00 decreased. At levels B, C, D and E the value of the slope was 0.00 which indicated no change revenues per pupil per district for each $1.00 increase in wealth per pupil per district. The lack of change in the values of the slope among the five levels indicated that their was little or no effect on the distribution of revenues per pupil per district when wealth per pupil per district changes $1.00.

Table 12

Slope of the Regression Line

Level A	UNWEIGHTED FTE[ddd]	0.00
Level B	UNWFTE + Group 1 Cost Factors[eee]	0.00
Level C	UNWFTE + Group 2 Cost Factors[fff]	0.00
Level D	UNWFTE + Group 3 Cost Factors[ggg]	0.00
Level E	UNWFTE + Group 1 + Group 2 + Group 3[hhh]	0.00

[ddd] (BSA) x FTE in Group One, Group Two, and Group Three = Unweighted FTE

[eee] (BSA) x FTE in Group Two and Group Three + (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Cost Factors**) x **FTE** in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream **Weighted Cost Factors**)

[fff] (BSA) x FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors**) x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream)

[ggg] (BSA) x FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors**)] x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

[hhh] (BSA) x FTE in (Basic K-3, Basic K-4, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream Cost Factors) x FTE in (Basic K-3, Basic 4-8, Basic 9-12, K-3 Mainstream, 4-8 Mainstream, 9-12 Mainstream + FTE in Group One and Group Three + (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream **Weighted Cost Factors)** x **FTE** in (Dropout Prevention, Teenage Parent, Intensive ESOL K-3, Intensive ESOL 4-8, Intensive ESOL 9-12, Educable Mentally Handicapped, Trainable Mentally Handicapped, Physically Handicapped, Physical/Occupational Therapy PT, Speech, Language, Hearing PT: Speech, Language, Hearing: Visually Handicapped PT, Visually Handicapped, Emotionally Handicapped PT; Emotionally Handicapped; Specific Learning Disability PT, Specific Learning Disability, Gifted PT, Hospital/Homebound PT, Profoundly Handicapped, Agriculture, Business and Office, Distributive, Diversified, Health, Public Service, Home Economics, Industrial, Exploratory (6-12), Vocational Mainstream) + FTE in Group One and Group Two + Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled **Weighted Cost Factors)]** x **FTE** in Job Preparatory (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), Supplemental Vocational (Agriculture, Business and Office, Distributive, Health, Public Service, Home Economics, Industrial), General Education (Adult Basic Skills, Adult Secondary Education, Adult Disabled)

Summary

The purpose of the study was to determine the effects of additional revenues for weighted program cost factors on the equity of the state school finance system. The measures of equity used in the study were the mean, range, restricted range, federal range ratio, variance, standard deviation, from the mean, coefficient of variation, McLoone Index, and Gini Coefficient. The variable measured was revenue per pupil per district. A synopsis of the values derived from the calculation of the measures of equity is displayed in Table 13.

Table 13

Summary of Values

	LEVEL A	LEVEL B	LEVEL C	LEVEL D	LEVEL E
Mean	3547.90	3645.60	3921.47	3562.72	4213.58
Range	2161.38	1088.47	2150.46	2146.77	2247.70
Restricted Range	971.72	452.10	531.54	971.13	954.90
Federal Range Ratio	0.2945	0.1303	0.1444	0.2934	0.2461
Variance	120336.1	28754.7	68924.2	119202.6	131745.6
Standard Deviation	346.89	169.57	262.53	345.25	362.96
Coeff. of Variation	0.0977	0.0465	0.0669	0.0969	0.0861
McLoone Index	0.97	0.96	0.94	0.97	0.97
Gini Coefficient	0.042	0.022	0.003	0.004	0.039
Correlation Coeff.	-0.06	-0.07	0.14	-0.05	0.04
Coeff of Determin.	0.0036	0.0049	0.0196	0.0025	0.0016
Slope	0.00	0.00	0.00	0.00	0.00

The measures of fiscal neutrality were the correlation coefficient, coefficient of determination and residuals, and the slope of the regression line. Wealth per pupil per district was the independent variable and revenues per pupil per district was the dependent variable. A summary of the values derived from the calculation of the measures of fiscal neutrality is displayed in Table 13.

Measures of Equity

Measures of equity were applied to five levels of the FEFP that represented sources of revenue for the 67 school districts in Florida. Calculations were performed under two conditions: UNWFTE and weighted cost factors. When additional revenues for weighted program cost factors were included in the calculation of the mean, range, restricted range, federal range ratio, variance, standard deviation, and coefficient of variation, the variation in the distribution of revenues per pupil per district varied. The change in the variation was the effect of additional revenues for weighted program cost factors.

When additional revenues for weighted program cost factors were included in the calculation of the McLoone Index, the variation in the distribution of revenues per pupil per district below the median varied. The change in variation was the effect of additional revenues for weighted program cost factors. When additional revenues for weighted program cost factors were included in the calculation of the Gini coefficient, the variation revenues per percentage of pupils decreased. The decrease in the variation was the effect of additional revenues for weighted program cost factors.

Measures of Fiscal Neutrality

Measures of fiscal neutrality were applied to the five levels of the FEFP that represented sources of revenue for school districts. Calculations were performed under two conditions: UNWFTE and weighted program cost factors. When additional revenues for weighted program cost factors were included in the calculation of the correlation coefficient, the relationship between wealth per pupil per district and revenue per pupil per district varied. The change in the relationship was the effect of additional revenues for weighted program cost factors.

When additional revenues for weighted program cost factors were included in the calculation of the coefficient of determination, the variation in the distribution of revenues per pupil per district explained by its relationship to wealth per pupil per district varied. The change in variance explained was the effect of additional revenues for weighted program cost factors. The values of the residuals increased when additional revenues for weighted program cost factors were included in the calculation. The increase was the effect of additional revenues for weighted program cost factors.

When additional revenues for weighted program cost factors were included in the calculation of the slope of the regression line, there was no change in variation of the distribution of revenues per pupil per district as wealth per pupil per district changed one unit.

CHAPTER V
SUMMARY, RESULTS, OBSERVATIONS, RECOMMENDATIONS AND IMPLICATIONS

Summary

Education is an enterprise whose potential for the maximization of human development, up to this point, can be estimated, at best. Special education has expanded its scope to include larger number of students including those with less and less difficulty or severity of handicap. Several methods of financing public education have been implemented throughout the United States. State legislatures have devised a number of funding schemes to allocate the educational resources of respective school finance programs within respective states. Inclusive and fair state school finance programs contain provisions for additional revenues for higher educational costs related to the legitimate differences among children in each state.

Legitimate differences, which merit unequal treatment, were directly related to the distinguishing characteristics of schools, school districts, and students. Some of the differentiating characteristics of children which resulted in additional per pupil costs were poor pre-school preparation, English as a second language, learning disabilities, and severe mental and physical handicaps. As a result of these legitimate differences, school districts were faced with extra costs associated with greater costs for transportation, food service, health care, public services, smaller teacher-pupil ratios, greater operational costs per pupil, certification requirements, and an inability to fully staff and retain exceptional personnel. Consequently, school districts required appropriate reimbursement to neutralize the increased costs that were associated with exceptional student programs and related services. In 1996 over five million students were enrolled in exceptional student programs in all school districts within the United States. Seventeen states use weighted program cost factors to supply school districts with additional revenues to ensure equity in response to higher costs associated with the education of exceptional students.

One of the most vital issues in the study of education finance was equity in the allocation of educational inputs. Early school finance theorists defined equity as the equalization of educational opportunity. An operational definition of equity meant a guarantee of equality in the allocation of educational revenues (horizontal equity) or a guarantee of sufficient revenues to provide comparable educational services and programs for students after their various needs and costs for providing for them were taken into consideration (vertical equity). The purpose of this study was to answer the question: What were the effects of additional revenues for weighted program cost factors on the equity of a state school finance system?

To demonstrate the effects of weighted program cost factors on equity among the 67 school districts in the state of Florida, a research design was developed which examined equity before and after weighted cost factors for Group One (Basic and Mainstream Programs), GroupTwo (At-risk, Exceptional Student, Vocational Programs), and Group Three (Adult Education Programs) were each included in the FEFP. Horizontal equity, vertical equity, and fiscal neutrality in the allocation of educational revenues were the equity concepts applied in the investigation. The concept of horizontal equity is that students who are alike should receive equal shares of educational revenues allocated by the state in order to ensure equal educational opportunity. The concept of vertical equity is that schools, school districts, and students who have increased educational need, associated with legitimate differences in the costs for providing an equal educational opportunity, should receive a larger share of educational inputs allocated through the state school finance program. The concept of fiscal neutrality is that the educational opportunity available to public school students should not be related to the assessed valuation of the local communities. School finance researchers have established fiscal neutrality as a necessary component of equitable school finance systems.

The legitimate differences associated with exceptional students programs and services fall under the concept of vertical equity. Exceptional students have greater educational needs, therefore, school funding programs should allocate additional revenues for their respective programs in order to ensure the concept of vertical equity.

Equity indices were applied under two conditions, before and after weighted program cost factors were included within the FEFP. The equity among school districts was determined prior to the application of program cost factors. Then additional revenues for weighted program cost factors were included in the equity calculations. The difference in the calculated values represented the effects of additional revenues for weighted program cost factors on the equity of a state school finance system.

The measures of equity were the mean, range, restricted range, federal range ratio, variance, standard deviation, coefficient of variation, McLoone Index, and Gini coefficient. The variable measured was revenues per pupil per district distributed through the Florida Education Finance Program. The measures of fiscal neutrality were the correlation coefficient, coefficient of determination and residuals, and the slope of the regression line. The relationship examined was that between wealth per pupil per district (independent variable) and revenues per pupil district (dependent variable). The four levels of the state school finance system that represented additional sources of revenue for school districts were Group One program cost factors (Level B), Group Two program cost factors (Level C), Group Three program cost factors (Level D), and an aggregate of weighted program cost factors in the FEFP (Level E).

Although there have been several investigations of issues related to the funding of exceptional students, mostly in the area of cost analysis, very little empirical evidence has been introduced which examines the effects additional revenues for weighted program cost factors on the equity of a state school finance program. Moreover, equity has been a central theme surrounding legal challenges to state school finance systems throughout the United States. This investigation was performed to determine the effects of additional revenues for weighted program cost factors and to analyze the results under school finance parameters established through the aforementioned litigation.

Federal grants for disabled students, court decisions on individual rights, public concern for equal educational opportunity, both state and federal legislation have ushered in an era in which the national education goal has become the development of each individual to his/her maximum potential. The increased emphasis on exceptional student programs and related services over the past 20 years have escalated school finance budgets nationwide. Equity in the distribution of educational resources for exceptional students has been the issue of substantial litigation in state and federal courts. The investigation was performed to contribute to the understanding of exceptional student funding and equity in school finance.

Results

The range of revenues per pupil considered the extremes between the 1st and 100th observations in the distribution. The value of the range was \$2161.38 for UNWFTE alone. The value decreased to \$1088.47 for group one program cost factors, \$2150.46 for group two program cost factors, and \$2146.77 for group three program cost factors. The value of the range increased to \$2247.70 when all weighted program cost factors were included within the calculation.

The restricted range considered the extremes between the 5th and 95th observations in the distribution. The value of the restricted range was \$971.72 for UNWFTE alone. The value of the restricted range decreased to \$425.10 for group one program cost factors, \$531.54 for group two program cost factors, and \$971.13 for group three program cost factors. The value of the restricted range also decreased to \$954.90 when all weighted program cost factors were included within the calculation.

The federal range ratio considered the difference between per pupil revenue at the 95th and 5th percentile, divided by the value at the 5th percentile. The value of the federal range ratio was 0.2945 for UNWFTE alone. The value of the restricted range decreased to 0.1303 for group one program cost factors, 0.1444 for group two program cost factors, and 0.2934 for group three program cost factors. The value of the federal range ratio also decreased to 0.2461 when all weighted program cost factors were included within the calculation.

The variance is the average of the squared deviations from the mean within a distribution of revenue per pupil. The value of the variance was 120335.1 for

UNWFTE alone. The value of the variance decreased to 28754.7 for group one program cost factors and 68924.2 for group two program cost factors. The value of the variance for group three program cost factors 119202.6 was nearly as large as that of UNWFTE. The value of the variance increased to 131745.6 when all weighted program cost factors were included within the calculation.

The standard deviation is the square root of the variance of the distribution of revenues per pupil. The value of the standard deviation was 346.89 for UNWFTE alone. The value of the standard deviation decreased to 169.57 for group one program cost factors and 262.53 for group two program cost factors. The value of the standard deviation for group three program cost factors 345.25 and for the inclusion of all weighted cost factors 362.96 was nearly as large as that of UNWFTE.

The coefficient of variation is the standard deviation of a distribution divided by the mean, expressed as a percentage. The coefficient of variation considers the variability in a revenue distribution around the mean observation. The value of the coefficient of variation was 0.0977 for UNWFTE alone. The coefficient of variation decreased to 0.0465 for group one program cost factors, 0.0669 for group two program cost factors, and to 0.0861 when all weighted program cost factors were included within the calculation. The coefficient of variation for group three cost factors, 0.0969 was nearly as large as that for UNWFTE.

The McLoone Index measures the equity of the equity of the lower half of the distribution only. It is expressed as the ratio of the actual revenue of all pupils below the median relative to the total revenue these pupils would receive if they were at the median per pupil revenue level in the state. The value of the McLoone Index was

.097 for UNWFTE alone. The value of the McLoone Index for group one program cost factors 0.96, group two program cost factors 0.96, group three program cost factors 0.97, and for all weighted program cost factors 0.97 were nearly as large as that for UNWFTE.

The Gini Coefficient indicated how far the distribution of revenues is from providing each proportion of pupils with equal proportions of revenue. It contrasts the actual distribution with of revenue with absolute fiscal equity. The value of the Gini Coefficient was 0.042 for UNWFTE alone. The value of the Gini Coefficient decreased to 0.022 for group one program cost factors, 0.003 for group two program cost factors, 0.004 for group three program cost factors, and 0.039 for all weighted program cost factors.

The correlation coefficient indicates the relationship between per pupil revenue and the local wealth of each district. The correlation coefficient was –0.06 for UNWFTE alone. The value of the correlation coefficient for group one program cost factors 0.07, group two program cost factors 0.14, group three program cost factors –0.05, and 0.04 for all weighted program cost factors were nearly as large as that for UNWFTE.

The slope indicated the magnitude of the relationship between revenue per pupil and the wealth of each district. The value of the slope was 0.00 for UNWFTE alone. The value of the slope for group one program cost factors 0.00, for group two program cost factor 0.00, for group three program cost factors 0.00, and for all weighted program cost factors were equivalent to that for UNWFTE.

Observations

Based on the values calculated from the measures of equity, the following were derived:

When additional revenues for basic and mainstream educational programs were included within the calculation of the FEFP the variation in the distribution of revenues per weighted FTE indicated an equalizing effect from the use of group one program cost factors.

When additional revenues for exceptional student programs were included with the calculation of the FEFP the variation in the distribution of revenues per weighted FTE indicated an equalizing effect from the use of group two program cost factors.

When additional revenues for adult education programs were included within the calculation of the FEFP the variation in the distribution of revenues per weighed FTE indicated a disequalizing effect from the use of group three program cost factors.

When additional revenues for all weighted program cost factors were included within the calculation of the FEFP the variation in the distribution of revenues per weighted FTE indicated an equalizing effect from the use of group three program cost factors.

Based on the values calculated from the measures of fiscal neutrality, the following findings were derived:

When additional revenues for basic and mainstream programs were included within the calculation of the FEFP the strength of the relationship between the wealth of the district and available revenues remained neutral.

When additional revenues for exceptional student programs were included within the calculation of the FEFP the strength of the relationship between the wealth of the district and available revenues remained neutral.

When additional revenues adult education programs were included within the calculation of the FEFP the strength of the relationship between the wealth of the district and available revenues remained neutral.

When additional revenues for all weighted program cost factors were included within the calculation of the FEFP the strength of the relationship between the wealth of the district and available resources remained neutral.

When additional revenues for weighted program cost factors were included within the calculation of the FEFP the average revenues per pupil increased in the 67 school districts in the state of Florida.

When additional revenues from weighted program cost factors were included within the calculation of the FEFP the revenues per weighted FTE in each district below the median required to bring those districts up to the median value of revenues per weighted FTE in each district remained virtually unchanged.

When additional revenues for all weighted program cost factors were included within the calculation of the FEFP the distribution of revenues per pupil moved closer to providing each percentage of percentage of pupils with an equal portion of revenues.

Recommendations

The use of weighted programs cost factors to fund basic and exceptional student programs assisted in establishing Florida as one of the most equitable funding formulas within the United States. Consequently, the use of these weighted cost factors within the FEFP should be retained. However, weighted program cost factors used to fund adult education program within the FEFP have produced disequalizing effects on the distribution of revenues per weighted FTE. It should be noted that not all 67 school districts in the state of Florida offered all adult education programs. State legislators will serve the state well to provide guidelines which promote consistency among district use of adult education programs and contributes to an equitable allocation of educational resources in the state of Florida.

Implications

This study examined the effects of weighted program cost factors which represented additional revenues used to support exceptional student programs and services. An examination of the effects of other exceptional student funding schemes; the instruction unit, percentage reimbursement, excess cost programs, and combinations thereof, adopted by respective state legislatures, on the equity of respective state school finance program may be beneficial.

This study included an analysis of the effects of weighted program cost factors for exceptional student programs and related services on the minimum foundation program used to finance elementary and secondary education in the state of Florida. Such studies are necessary given the case law and statutory mandates that set forth provisions for exceptional student programs and related services.

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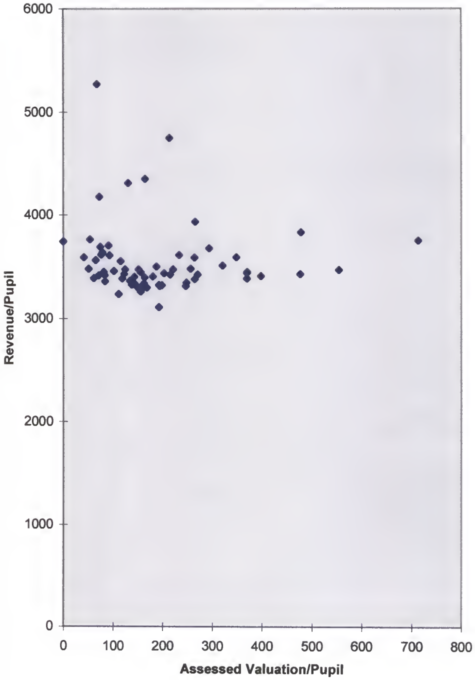
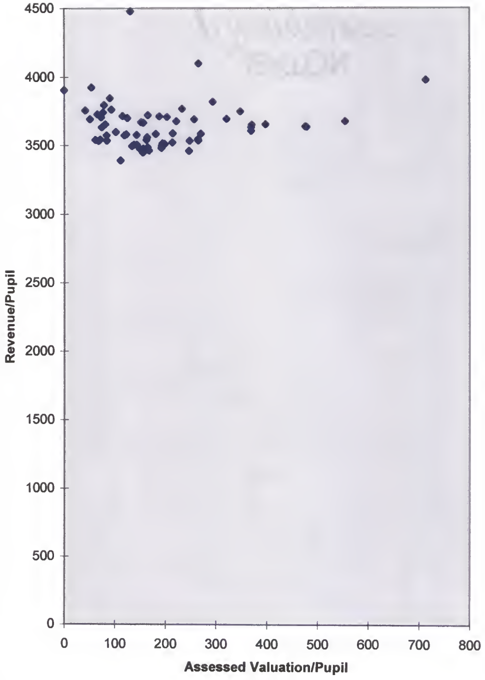
APPENDIX A
SCATTERPLOTS

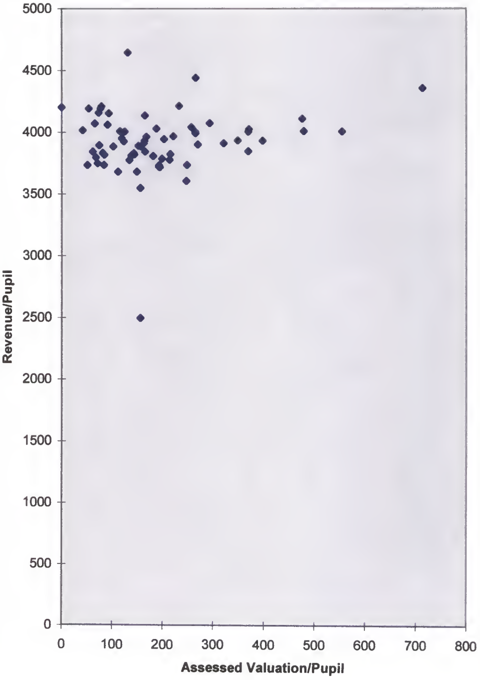
Unweighted FTE Scatterplot



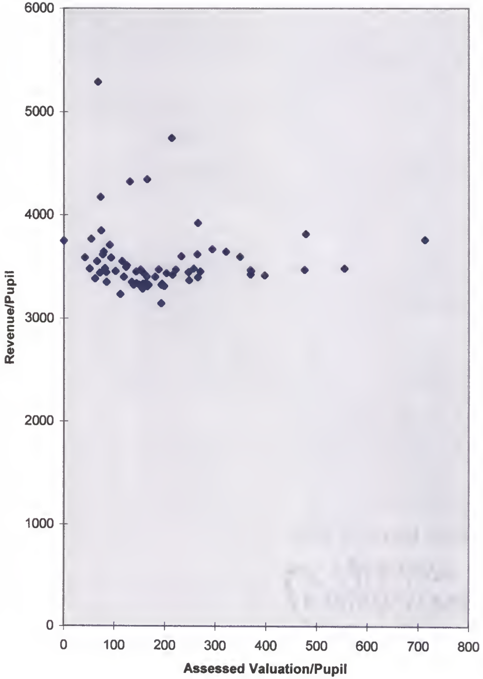
UNWFTE+ Group One Cost Factors

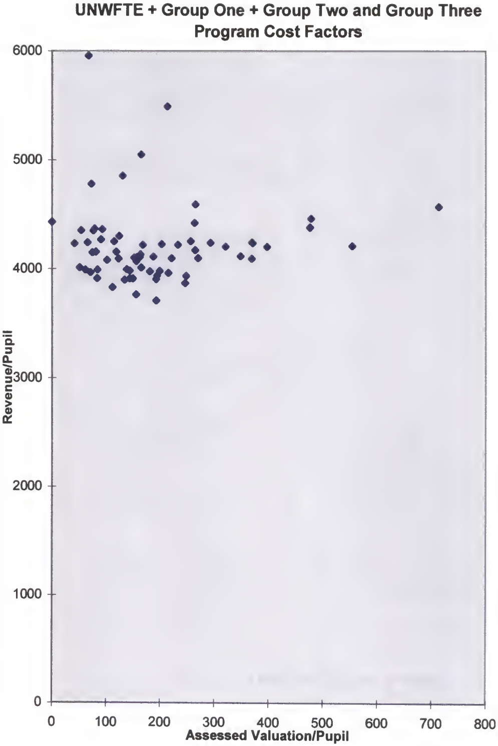


UNWFTE+ Group Two Cost Factors



UNWFTE+ Group Three Cost Factors




UNWFTE + Group One + Group Two and Group Three Program Cost Factors
Revenue/Pupil
6000
5000
4000
3000
2000
1000
0
Assessed Valuation/Pupil
0
100
200
300
400
500
600
700
800

BIOGRAPHICAL SKETCH

Born March 29, 1964 in Winter Park, FL, Lenford Charles Sutton Sr. was the ninth of ten children born to Lorene and Raleigh Sutton. He was reared and nurtured in the small town of Sanford, FL where he attended Idyllwilde Elementary School, Lakeview Middle School, and graduated from Seminole High School in 1982.

During the years from 1982-1987 he attended the Florida State University in Tallahassee, FL where he received his Bachelor of Science Degree in Economics. Upon the birth of his son (1987), Lenford C. Sutton II, he returned to his hometown of Sanford, FL and began his career in Education as Math instructor at the Crooms School of Choice where he worked successfully for five years. While serving as a Math teacher, football coach, basketball coach, and full-time single parent, Mr. Sutton gained admission to Stetson University in Deland, FL where he excelled and graduated with his Master of Science degree in Educational Leadership.

In 1993, he received his first administrative appointment as an Assistant Principal at Sanford Middle School. Two years later he was promoted to Assistant Principal I at Lake Mary High School in Lake Mary, FL. He continued to serve as a secondary administrator in the Seminole County School system collaborating with teachers, parents, community leaders, and various civic organizations to improve the quality of educational experience for local students.

Following the passing of his mother in 1994, Mr. Sutton was admitted to the East Coast Professional Development Program through the University of Florida in the department of Educational Leadership. It was at this time he formed a professional relationship with Dr. R. Craig Wood, who assisted in his acquisition of an interest in the areas of school law and education finance. In the fall of 1996, Mr. Sutton was inspired by James Doud, Chair of the Educational Leadership Department, and Dr. Wood to take a leave of absence from his position as an Assistant Principal at Lake Mary High School to become a full-time graduate student. With most course requirements for the Ed.D completed, Mr. Sutton changed his course of study and obtained the necessary research prerequisites for the completion of the degree of Doctor of Philosophy in Education Leadership.

The completion of the law and finance courses under R. Craig Wood and his relationship with David Honeyman augmented his interest in the fields of school law and finance. This interest was furthered by his appointment as a graduate assistant to the Director at the P.K.Yonge Development Research School on the campus of the University of Florida. His experience at the Developmental Research School afforded him an opportunity to serve as an on-campus consultant for school operations, participate in budgeting and school allocations, and develop the Human Resources Development Program (HRMD) for the lab school. He was also afforded the opportunity to work under the Leadership of Dr. Linda Crocker, Assistant Dean of the College of Education, as a research assistant in the Title I Program. At the time of the completion of this investigation Mr. Sutton was an Assistant Principal I in the Seminole County Public Schools.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy

R. Craig Wood, Chair
Professor of Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy

David Honeyman, CoChair
Professor of Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy

James L. Doud

James Doud
Professor of Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy

Walter L. Smith

Walter Smith
Professor of Educational Leadership

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy

Michael D Miller

Michael D. Miller
Professor of Foundations of Education

This dissertation was submitted to the Graduate Faculty of the Department of Educational Leadership in the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy

August 1998

Roderick J McDavis

Dean, College of Education

Dean, Graduate School